THE IRON AGE

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A Typically Modern Suburban Factory

The Russell Mfg. Company's New Plant—The Fire Hazard Factor—Heat Treating Room with Shuttered Louvered Windows

The factory of the Russell Mfg. Company, Greenfield, Mass., affords an instructive example of an essentially modern plant complete in itself in every detail, yet designed for convenient expansion on the unit system, as the growth of the business shall demand additional space. The industry is a new one. Whitman Russell, the president, was for years the superintendent of the works of the Wiley & Russell Mfg. Company, and Charles C. Russell, the treasurer, was manager of the same business. The product is taps, dies and screwplates, in the manufacture and marketing of which the managers of the Russell Mfg. Company have had long experience.

The building is 80 x 120 ft., with an ell 32 x 36 ft., containing the heat treating department and the boiler room. No engine space is required, as power is supplied from a hydroelectric plant located not a great distance from Greenfield. The structure is of brick and wood, of slow burning construction. The floor is directly on the ground, laid on timbers set in cinder and cement, which have a foundation of gravel. The ceiling is 14 ft. overhead and 12 ft. in the clear. Wooden posts support the roof, and the designers point to the gain in the size of the bays as compared with what would have been obtained with concrete columns, which would have been 24 in. square with 9 ft. centers, while the 8-in. wooden columns have 20-ft. centers.

The factory is splendidly lighted. The windows extend to the lintels, close to the ceiling, and are 10½ ft. high and 7 ft. wide. The walls form a prac-

Fig. 1—The Heat Treating Department of the Russell Mfg. Company Showing the Shuttered Louvered Windows

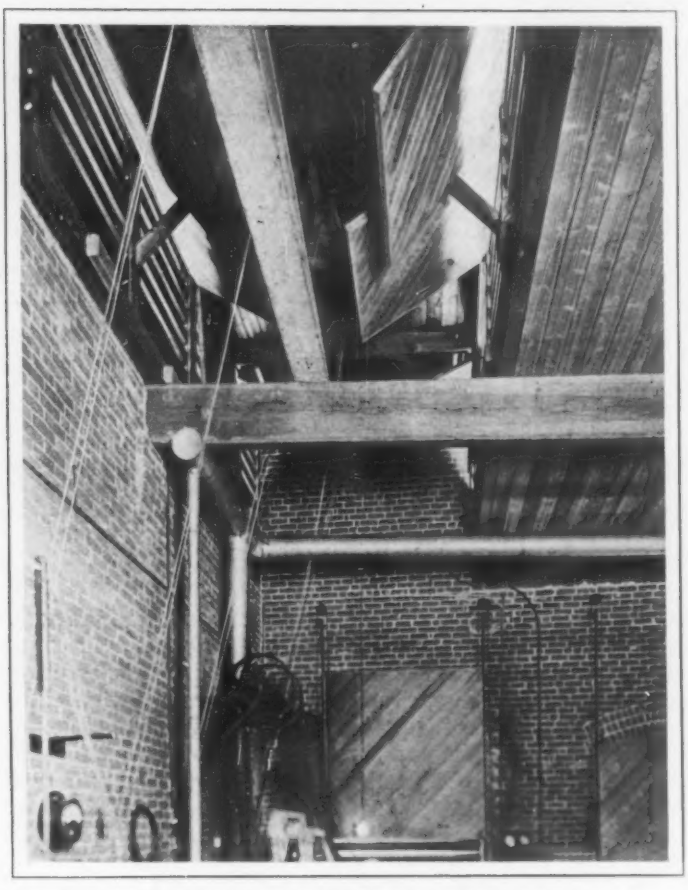


Fig. 2—The Monitor of the Heat Treating Department and Its Windows

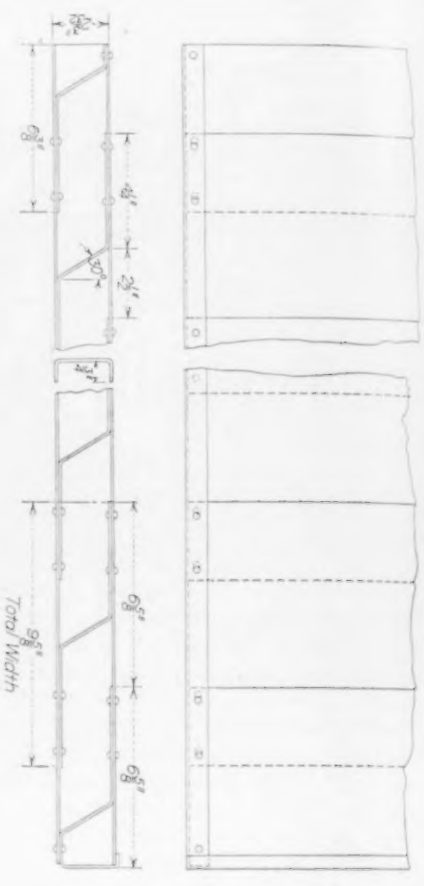


Fig. 3—Details of the Galvanized-Iron Louvers

tically unbroken expanse of glass. The two lower rows of panes of each window are of plain glass, the management offering no objection whatever to the workmen having a free view over the surrounding country, a landscape restful to the eye, with green grass and trees in the summer, the bright colors of foliage in the autumn, and the no less beautiful whiteness of the winter. The moments spent in this manner are seldom wasted; a man, it is held, returns to his labor refreshed. Additional illumination is secured by skylights.

The shop location is worthy of serious consideration by manufacturers who are contemplating the building of new plants. Such sites are not difficult to find in the smaller industrial centers. Though hardly an eighth of a mile from the railroad station, and well within the limits of the populous section of the town, the factory is isolated

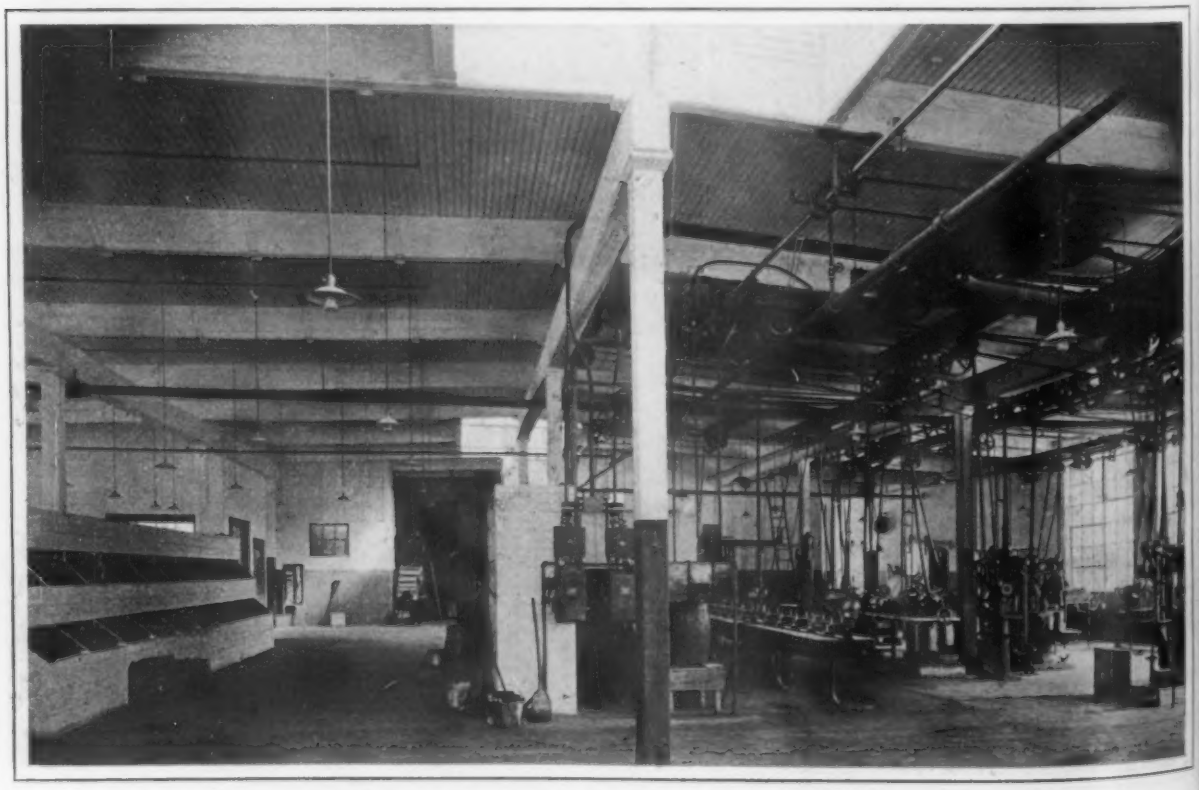


Fig. 4—The Main Factory Room of the Russell Mfg. Company

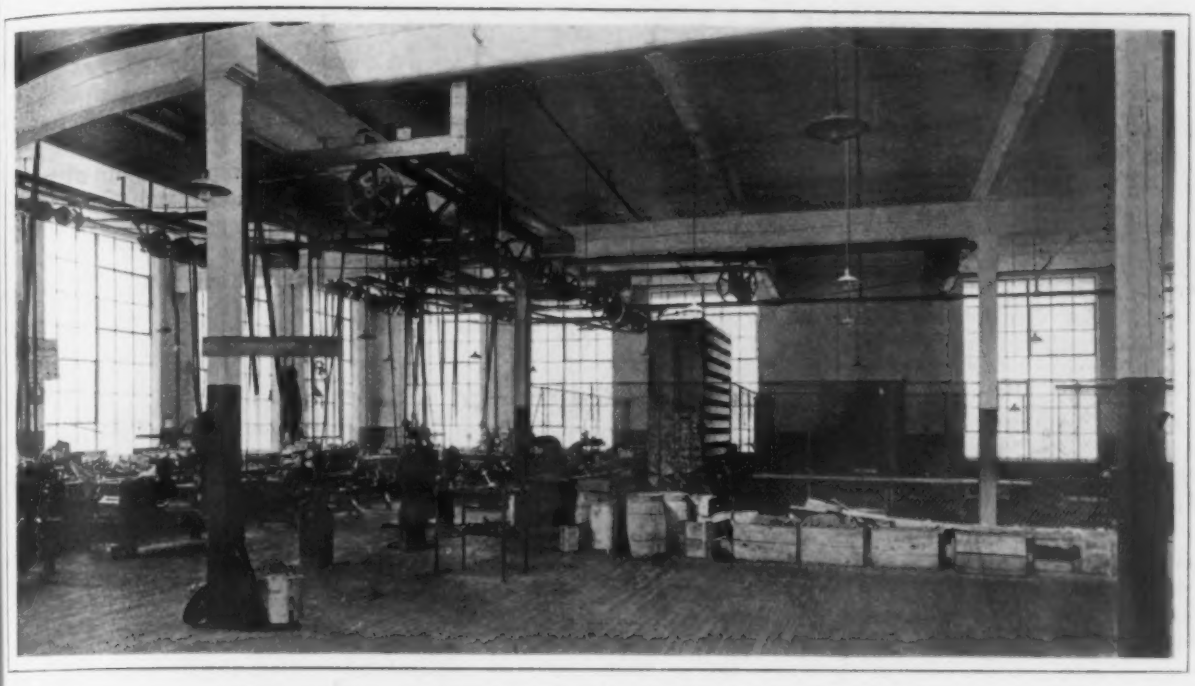


Fig. 5—A Glimpse of the Manufacturing Section of the Russell Factory

from other buildings, in a level tract of grassland. The atmosphere is clean and wholesome to a degree impossible to obtain in the manufacturing neighborhoods of larger communities. There is no conflagration hazard. The nearest buildings could not possibly generate heat enough in the burning to cause the spread of flames to the structure, even under most unfavorable conditions. As there is no basement no fire can come from underneath the factory floor. Therefore all the risk is from the inside of the building.

Comparison may be made to the conditions as they existed in the manufacturing section of Salem, Mass., which was wiped out in the recent conflagration, the loss including even those buildings in which were enforced the rigid rules of the factory mutual fire insurance companies.

In very few manufacturing plants—very few indeed—is consideration given the element of risk attending oil-soaked woodwork, especially floors. In many cases this inflammable combination has caused a quick sweep of the flames, and made losses abnormally high. The Russell Mfg. Company has its factory floor washed thoroughly with soda water twice a week. The oil is removed. Not only is the fire danger reduced, but also the chance of accident to workmen, for slipping on an oily floor has always been a prolific source of injury where there are moving parts of machinery. Moreover the wood retains its natural light color, instead of

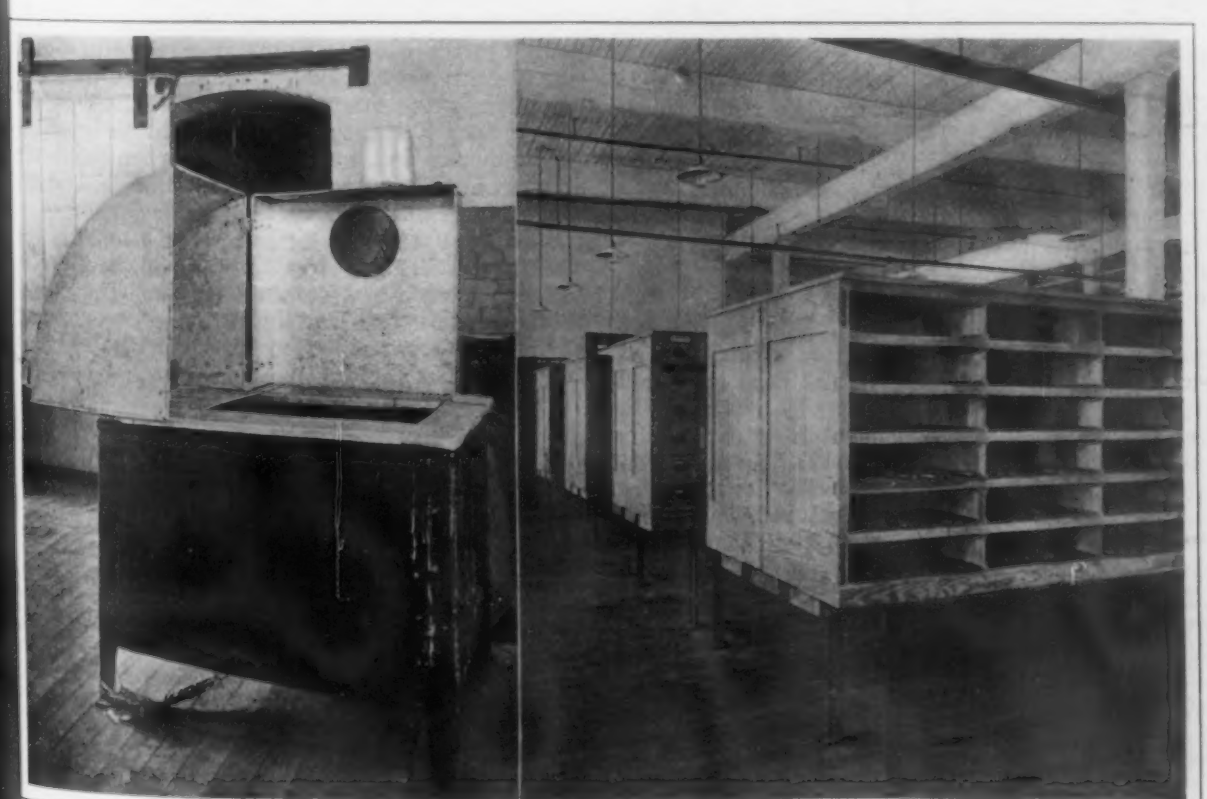


Fig. 7—The Oil Tempering Tank with Side Swing Hood

Fig. 6—The Stockroom and Its Substantial Wooden Racks

turning a dark brown, and serves as a reflecting surface and adds to rather than absorbing illumination.

As will be seen in the illustrations the main section of the building consists of a great factory room, with the office and stockroom at one corner and at one end a room to which the grinding and polishing are confined in order that no dust or grit may find its way into the places where the majority of the workmen are employed. Instead the dust makes its escape through an exhaust system. The view in Fig. 4 is looking down the large room toward the office at the left hand corner. Some excellently designed bins will be noticed at that side of the factory. In the center of the space is the central toilet station, one of which will be installed in each succeeding unit of the works. The view in Fig. 5 is across the factory in the opposite direction.

In Fig. 6 are shown the stockroom racks, which are of homemade design and construction. They are very well adapted to their purpose. They are built of Southern pine, and are mounted on standard iron bench legs. As the product stored upon them is non-inflammable the fact that the shelves are of wood is of small consequence.

The heat treating department is worthy of careful study. The details of its design and equipment are shown in Figs. 1 and 2. The problem was to create a freely ventilated room in which a constant degree of subdued light could be maintained. The result is an entire success. On two sides of the room are great wooden shutters, sliding vertically and counterweighted so that the effort of handling them is slight. On the outside are galvanized iron louvers through which air enters freely, but which exclude most of the light, and that which enters is wholly indirect. Beneath the large shutters are smaller ones, for use should a still greater circulation of air be desired. The room is very high studded and is surmounted by a monitor extending its entire length and having shuttered louvers at either side, the shutters being operated by ropes from the floor.

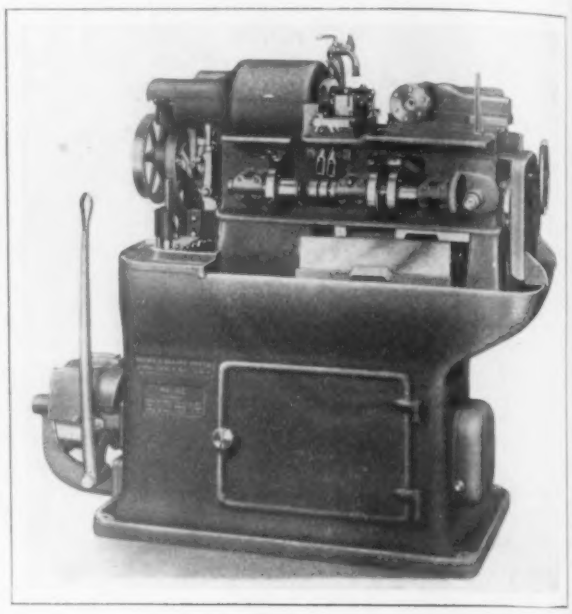
The details of the galvanized iron louvers, which are the company's own design, are shown in Fig. 3. Each blind is supported by two side channels, to which the louvers are riveted. The upper louver is extended to form a rigid end support. The size and relation of the openings are very important if direct light is to be completely excluded. The Russell Company experimented for some time before the conclusion was reached that a 2½-in. opening with the overlap of about the same dimensions, is the most satisfactory practice.

The oil tempering tank, Fig. 7, is unusual because of the side swing of the hood through which the fumes make their escape. The hood is hinged at the side and this work was done by a local smith. The purpose of this arrangement is to permit the easy placing and removal of a basket. As for equipment, the department is noteworthy for its completeness for the product manufactured, containing furnaces for gas and oil, tempering tank, hoist and forge.

The Samuel Austin & Son Company, Cleveland, Ohio, has taken the contract to build a new plant at Niagara Falls, Ont., for the American Chain Company, Bridgeport, Conn. The main building will be 159 x 440 ft., of reinforced concrete and steel. The plant will be used for the manufacture of Weed tire chains for the Canadian trade. The Austin Company has also just taken a contract for a large glass warehouse to be built at Thorold, Ont., for the Pilkington Brothers.

An Improved Automatic Screw Machine

The Brown & Sharpe Mfg. Company, Providence, R. I., as noted in last week's issue, has added to its line of screw machines a model, a notable feature of which is that it is driven by a single belt. The main driving pulley runs in one direction at a constant speed and has a friction clutch for starting and stopping, which arrangement permits of belting direct to the lineshaft, eliminating all overhead works. Thus the belt-driven machine of this type



The New Brown & Sharpe Automatic Screw Machine with Single-Belt Drive

may be placed to better advantage on the factory floor, and the application of motor drive is made comparatively simple.

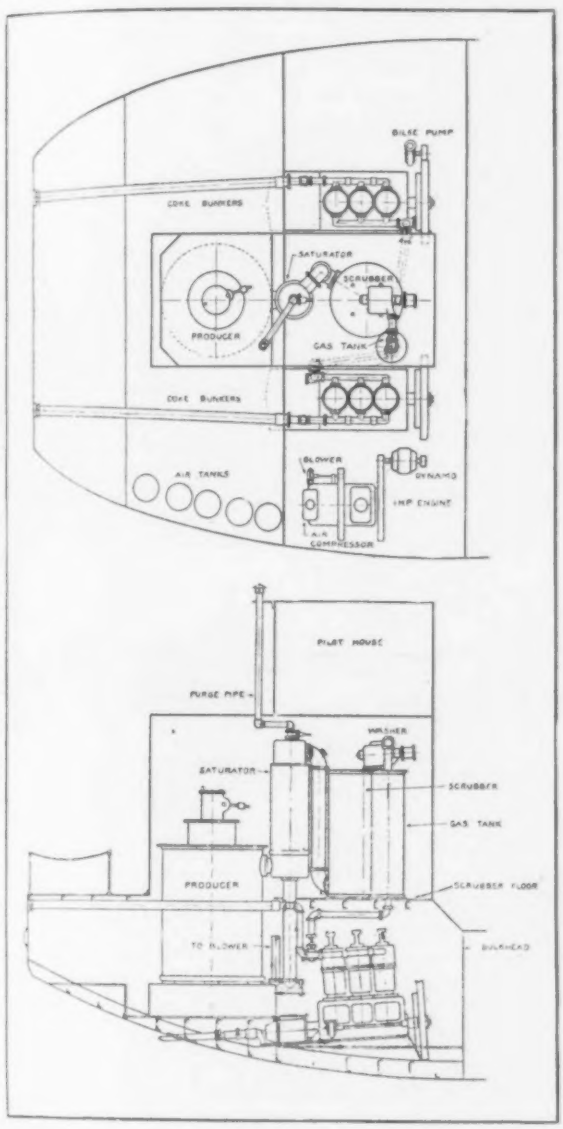
Power is transmitted from the main driving shaft, which runs through the base of the machine, to the spindle by a pair of belts, one for driving forward, the other for driving backward, the change being controlled by an automatically operated friction clutch. Speed changes are obtained by a pair of change gears located outside of the base, under a hinged cover, at the right-hand end of the machine. An automatic speed change is incorporated in the driving mechanism, operated by the feed shaft, which serves to slow down the spindle for threading and similar operations in the ratio of 1 to 2¼. The machine handles bar stock up to ½ in. in diameter and turns work to 1¾ in. in length. The details of the construction and operation of the driving mechanism are similar to those of the machine which was illustrated in *The Iron Age*, April 3, 1913.

Estimates made by the International Institute of Agriculture at Rome and cabled last week point to an aggregate wheat production of 2,458,000,000 bushels, or 3.4 per cent. less than last year in Great Britain, Belgium, Spain, Italy, Luxemburg, Russia, Switzerland, the United States, Tunis, Japan, India and Hungary. For the same countries, excepting India, the estimate of the oat crop is 2,356,000,000 bushels, or 7.6 per cent. less than last year. In Russia the estimate for spring wheat is 390,391,000 bushels, or 28.08 per cent. less than last year.

The Grabler Mfg. Company, Cleveland, Ohio, will erect a three-story building to be used entirely for office purposes.

Self-Propelled Southern Coal Barges

Mention was made in *The Iron Age*, August 21, 1913, of the building of a number of self-propelled barges for transporting coal from the fields of Alabama to New Orleans. At the present time six of the barges are in operation; the seventh is nearing



Deck Plan and Elevation of a Gas Engine Driven Barge Used for the Transportation of Coal on Southern Rivers Showing the Location of the Gas Producer and the Engines

completion and eight more are to be built. While the whole transportation scheme is in itself a novel one, the feature of considerable interest is the arrangement made for propelling the boats. The coal will be carried above the deck. The space below and aft is given over entirely to the engines, gas producers, auxiliary apparatus, etc. The power plant is located in a space about 28 ft. long and consists of two 75-hp. producer gas engines and a gas producer which constitutes the main power plant, while there is in addition a 9-hp. oil engine for driving the lighting dynamo and air compressor and other machinery, all of which was made by Fairbanks, Morse & Co., Chicago, Ill.

The propelling engines are of the three-cylinder four-cycle type and run at a normal speed of 300 r.p.m. The speed, controlled by a governor, may also be changed at will by a hand-controlled speed regulator. The engines are set at an angle of 3½ deg. from the horizontal and are supported on steel plate foundations built solidly into the hull of the boat. From the engines the power is transmitted to a gear drum and disk clutch, the gears coming into action only when the propeller is reversed. The propelling speed is 7 miles per hr. as a minimum. The engines are placed about 12 ft. apart, with the operating side toward the central control point.

The gas producer uses a waste product obtained at low cost. The fuel is a pea-size coke procured from ovens supplying the blast furnaces near the Tuscaloosa coal fields. The producer is of the water-bottom type and the fuel column rests on a bed of ash in the ash pan, which is partly filled with water. Air to support the gas generating process enters the fuel column through central tuyeres. The fuel is charged through a bell hopper having an automatic interlocking lid, designed to prevent leakage of air into the producer while charging. A water pan through which some of the water from the engine jacket circulates protects the top of the producer and keeps the charging platform cool.

After the gas leaves the producer it passes through a pipe inside of a saturator and then in turn through a scrubber, a washer, and finally into a gas tank which has a provision for separating out any water that may be carried over from the washer. A purge valve located on top of the saturator and arranged to operate either from the producer top or from the engine room is included in the equipment. The quantity of water vapor supplied to the fire is automatically controlled by the saturator which is built around the outgoing gas pipe from the producer and is arranged so that the air supply for the producer has to pass over a large area of heated water. The heat possessed by the gas partly heats the water, although most of the heat is taken from the engine jacket water.

The auxiliary apparatus includes a power-driven bilge pump of the centrifugal type, having a capacity of 500 gal. per min. This pump, which is employed for pumping bilge water and for shifting the water ballast, is operated by one of the large engines. The lighting dynamo, which is mounted on the under side of the deck furnishes light for the entire vessel as well as current for a 3000-cp. searchlight and for the winch motor used in hoisting the anchor. It can be driven by one of the larger engines if desired, or from the 9-hp. oil engine which has a clutch connection for driving the air compressor that furnishes the compressed air for starting the large engine, blowing the whistle and other purposes. A number of pressed steel tanks are provided for air storage, so that the compressor need not be operated continuously.

It is stated that the fuel consumption of the two engines is not more than 150 lb. per hr. The cost of this fuel delivered in the bunkers is from $1 to $2 per ton, so that the average fuel cost when running with a full cargo is approximately one cent per 600 ton-miles, which means that a ton of coal can be transported 500 miles from the coal mines to the port of New Orleans for less than one cent, while the cost of transporting a full cargo of 1000 tons is about $8.33.

The Richardson-Carroll Electrical Company has established an electrical agency at Vickery's Chambers, 82 Pitt street, Sydney, N. S. W., and is seeking to represent there American manufacturers of motors and electrical accessories and heating apparatus.

The Grand Trunk Railway Company has placed an order for six suburban engines with the Montreal Locomotive Works, Montreal.

Link-Belt Malleable Foundry at Indianapolis

Buildings Shaped and Furnaces Placed to Reduce Carriage of Materials and Product to the Minimum—Several Unusual Equipment Features

It is the business of the Link-Belt Company to cure industrial ills associated with the conveyance of materials. In this capacity the company is not free from the logical expectation that the family of the physician should be among those most immune from the ills that plague. One is not surprised then to find in the new Belmont works of the Link-Belt Company at Indianapolis—a malleable-iron foundry with an annual capacity of 7000 tons for the exclusive production of chain—a conspicuous absence of conveying devices. The elementary hand ladle, the steel barrel and the wheelbarrow suffice. Believing that "an ounce of prevention is worth a pound of cure," this foundry is laid out to reduce to a minimum the average distance through which all materials must be handled and to simplify the handling of materials to the greatest possible extent. The ground plan layout devised to accomplish these ends constitutes the principal feature of novelty. It may also be pointed out that the character of the product lends itself very readily to the general foundry plan.

Birdseye View of the Belmont Works of the Link-Belt Company Giving an Idea of the Shape of the Foundry Buildings and the Location of the Furnaces As Indicated by the Stacks and Also the Pig-Iron and Coal Storage, the Scale House at Each Furnace and the Concrete Walk Around the Building. In the Foreground Is the Core Making Building

The complete scheme and efficiency of the design are most apparent in a consideration of the plant as it will be ultimately. The buildings shown in the full lines in the accompanying general plan constitute the present plant and those in dotted lines the duplicate unit to be built subsequently. Attention is called to the center line which passes through the coreroom and the trimming room and constitutes a median line about which the plant activities center. The plans provide for the ultimate construction of an eight-furnace foundry. The block plan indicates the manner in which these furnaces are located and how the buildings are erected in such a way that it is as though four capital letter T's were placed to form a hollow square, one such group on each side of the median line. At the point of intersection in each T-shaped component of the building an air furnace is located.

To illustrate to what extent this arrangement reduces the distance to be traversed in handling materials and hot metal for pouring arcs have been swung with the coreroom as a center and with the trimming room as a center. It is apparent that these arcs include six out of eight furnaces and only two are at a greater distance. In other words, the average distance through which all cores have to be handled to the foundry and the average distance through which all castings must be handled to the trimming room is about 300 ft., and for more than one-half of the entire foundry floor space these distances are approximately equal. Swinging similar arcs from each furnace illustrates how the distances in three directions through which the hot metal must be carried for pouring have been brought down to a minimum. The limits of the pouring floors from each furnace are at a maximum distance of approximately 70 ft. in a foundry that will have an aggregate floor space of nearly 150,000 sq. ft. The court areaway formed by the layout of the buildings also provides a central location for auxiliary service buildings, such as a storage building for bottom boards from which all of the molding floors are thus equally distant. This building also houses a blacksmith shop, general toilet facilities and cinder mill.

The general plan also invites attention to the advantages the plant and furnace arrangement offer in the handling of raw materials. The plant site lies between the tracks of the Vandalia lines at one end and the Big Four at the other. Spurs from both railroads circumscribe the buildings and on the east and west sides duplicate coal bins and pig-iron storage spaces are located for direct unloading and also in immediate proximity to the furnaces. A wide concrete walk has been laid around the entire plant and particular care is observed in keeping this clean and unobstructed for traffic.

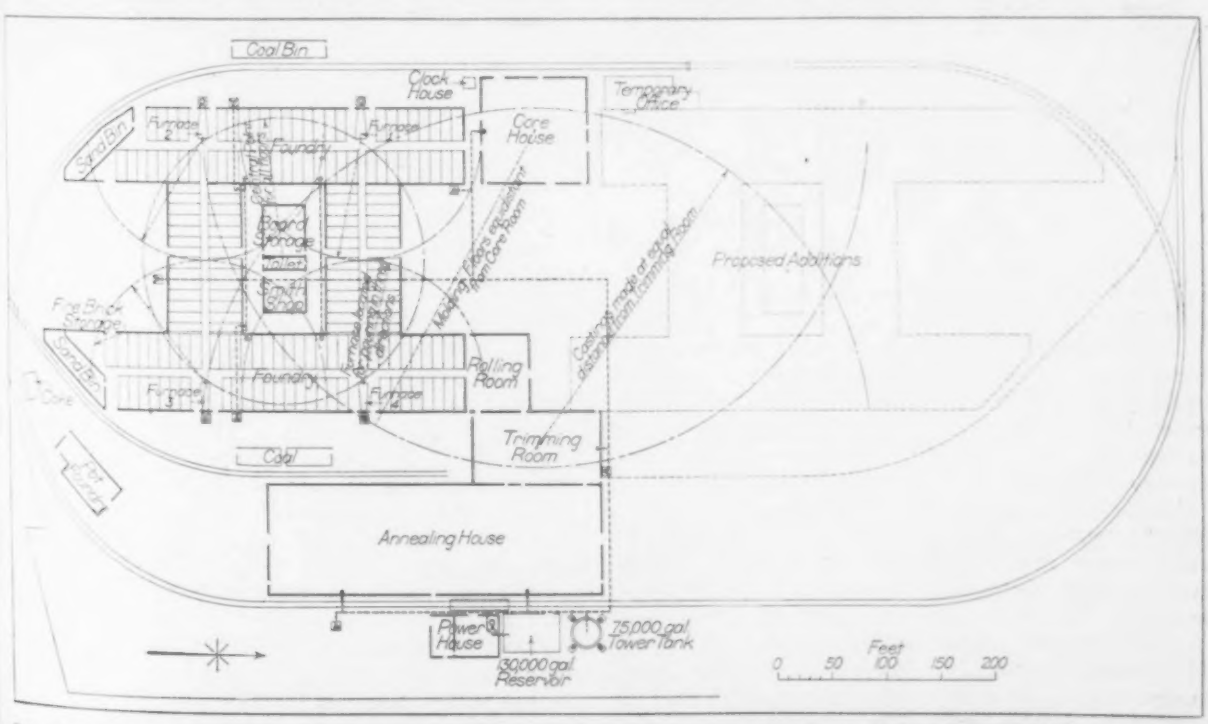
It will be noted from the general view of the

A Typical View in the Foundry Showing the Aisle Feature with the Molding Floors on Each Side. In the Distance May Be Seen One of the Melting Furnaces at the End of the Aisle in the Center

works that the pig iron which is unloaded from the cars on gravity conveyors is piled inside of the track, illustrating one of the minor details in which care has been given to the reduction of distance. Sand bins at the south end of both east and west wings are located with equal convenience for unloading direct from the cars. This applies also to the core sand, the bins for which are in the basement of the corehouse. Opposite the entrances to the foundry at each air furnace, scalehouses are placed so that the charges of raw material can be weighed in the direct line of transit from storage to furnace.

Within the foundry a similar attention to the maintenance of unobstructed passageways and a general orderliness is conspicuous. A general interior view here reproduced will emphasize this fact. The east and west wings of the foundry and the connecting sections are 70 ft. wide. These floor spaces are laid out with center aisles 7 ft. 6 in. wide, from which aisles molding floors 31 ft. deep and 10 ft. wide, fronting on the aisle extend. The furnaces are located at the intersection of the east and west aisles with the north and south and serve approximately 40 floors each. These aisles are laid with a heavy clay mixture packed down to give a hard yet springy footing and are surfaced with a slight crown which is scraped regularly to keep down the accumulation of dirt. They contribute in an important way to the general scheme of the foundry operation.

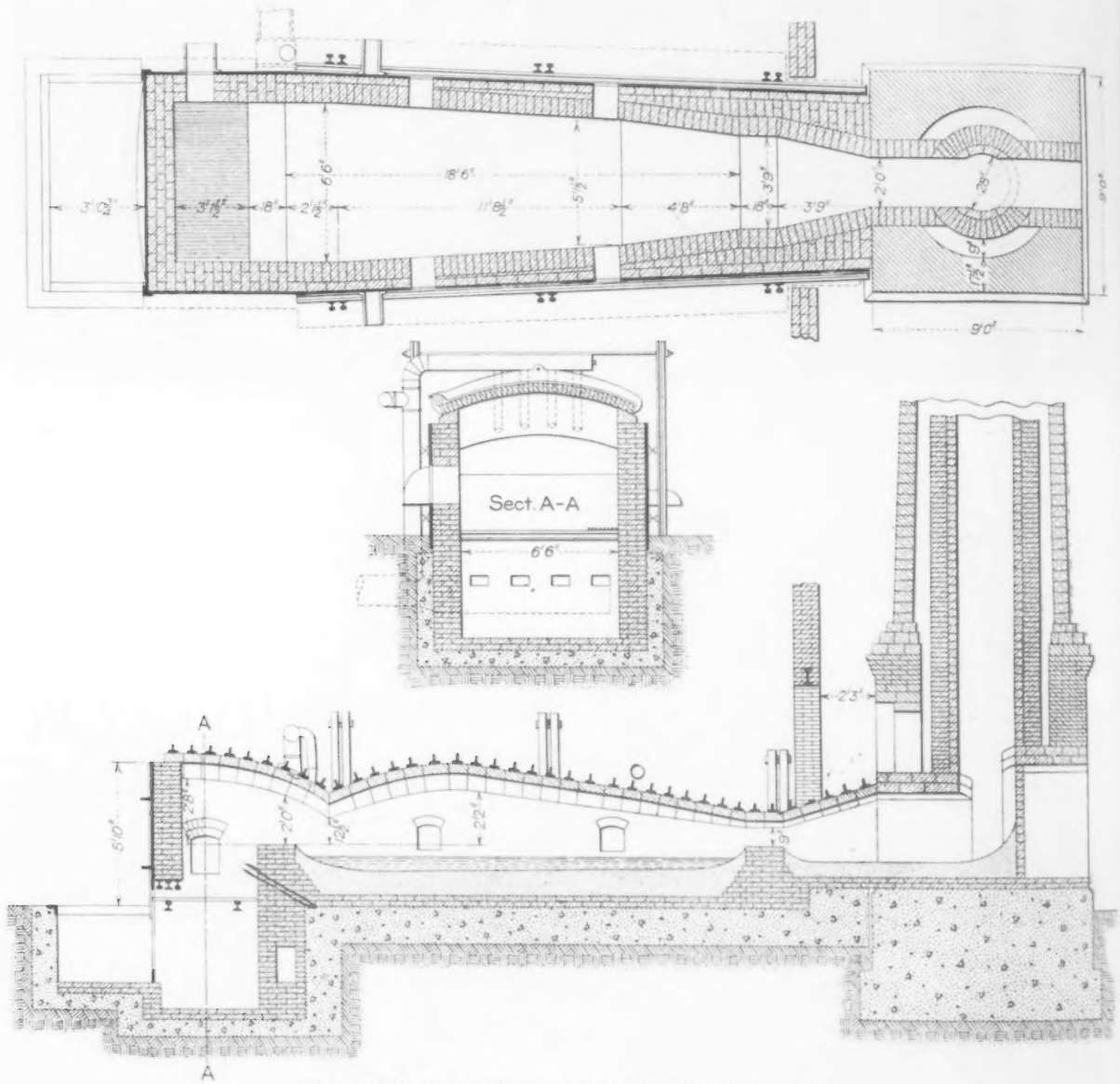
Slow burning, timber frame, mill construction



General Plan of the Works Showing the Average Distance that Cores Are Carried to the Molding Floors, that Castings Are Taken to the Trimming Department and Through Which Molten Iron Is Carried to the Molds

S. DIESCHER & SONS,
Mechanical and Civil Engineers,
PITTSBURGH, PA.

with brick walls and asbestos roofing was adopted for the foundry. With no overhead crane to provide for, the hight of the building was required to be sufficient only for light and ventilation. The use of a monitor roof with continuous sash made the width moderate and the cross-section design readily adaptable to timber construction. This construction was used on account of its much lower first cost and because considered more economical to maintain than steel construction in a foundry. It also provides ample strength for the installation



Plan and Elevation of One of the 12-Ton Melting Furnaces

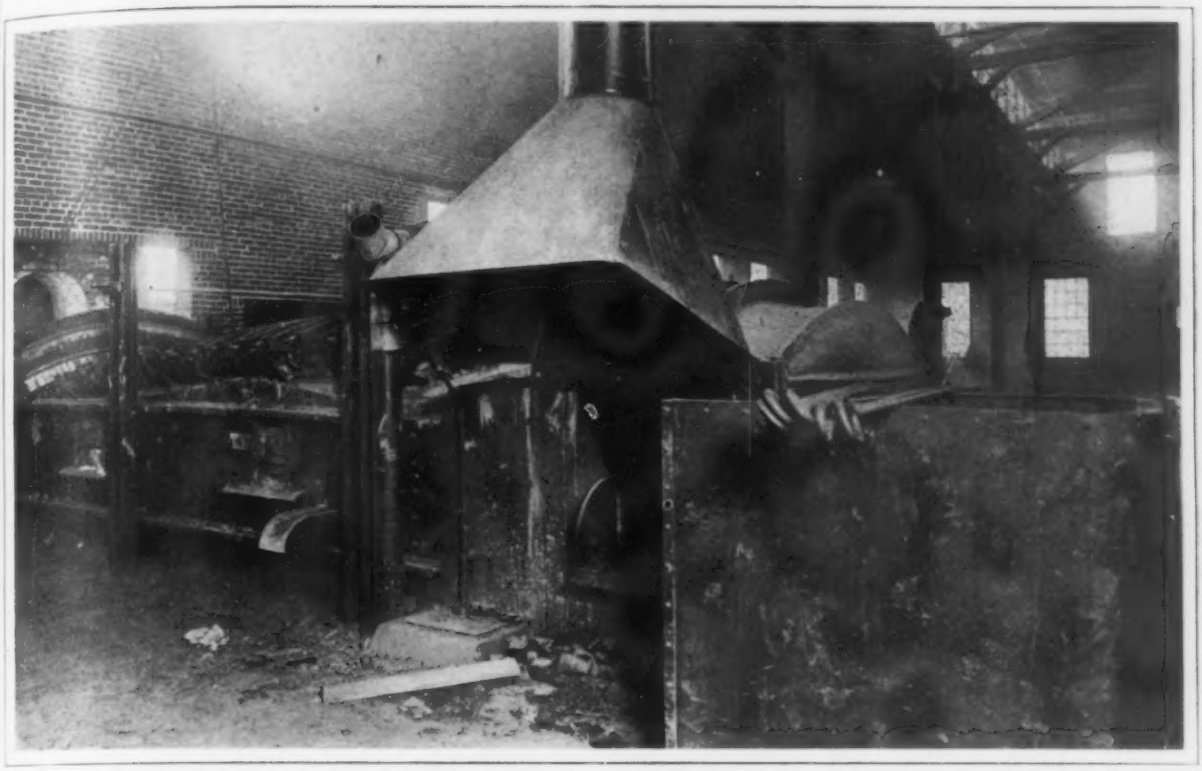
of an overhead trolley if that should ever be found desirable.

This construction carried with it the necessity for fire protection, and the entire plant is districted in six stations corresponding to six hose houses. An automatic sprinkler system is installed also. The fire pump, located in the power house, is the direct motor-driven centrifugal type with a capacity of 1000 gal. per minute. It is hooked up with a 130,000-gal. reservoir storage. There is also a 75,000-gal. gravity tank. Twenty-five thousand gallons from the top of this tank is available as a domestic water supply.

The melting furnaces have a capacity of 12 tons. The length of hearth is 18 ft. 6 in. and the width tapers from 6 ft. 6 in. at the front bridge wall to 3 ft. 9 in. at the back. The general lines of the furnace are here illustrated. The firedoor for the firebox is at the side of the furnace near the front end and is canopied with a hood and flue so that the smoke from the soft coal at the time of firing is carried off at once and does not contaminate the foundry air. The ashpit cleanout is at the front of the furnace. The drawing illustrates the manner in which the rear end of the furnace is built through the wall of the building to the self-supporting stack outside. These stacks are of the standard hollow-tile jacketed type.

The air for the furnace is brought underground from a direct-connected motor-driven blower mounted on a concrete pier about 5 ft. above floor level. This concrete pier is hollow and the air is delivered down through it. It is fitted with an extra opening at one side so that in event of the blowing unit above going out of service, a duplicate spare blower unit mounted on a truck may be run up to the pier, the air and electrical connections made in two or three minutes and the service continued almost without interruption until the regular unit is repaired.

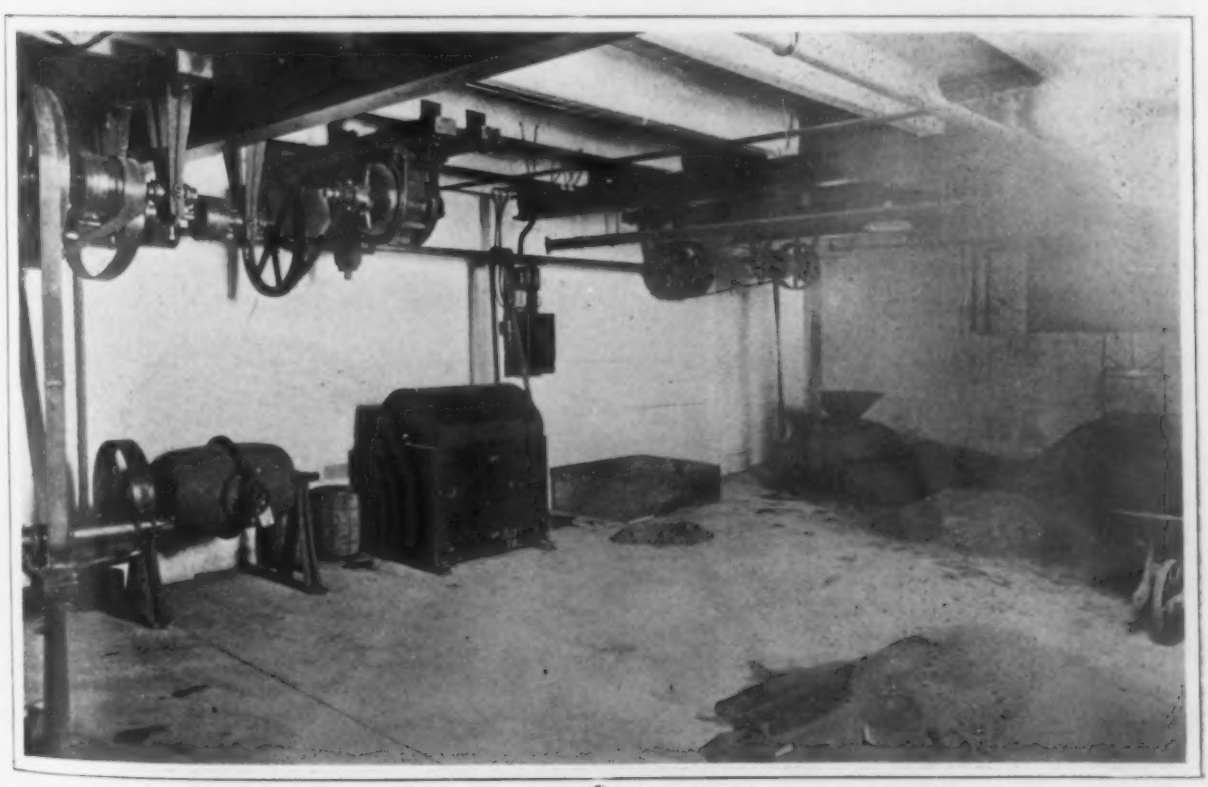
The molding is handled with power and hand machines and operator for each floor. Emphasis is placed on safety in the various foundry operations and it has been found in connection with taking hot metal from the furnace that the number of men accidentally burned is greatly reduced where the molder cuts in with his ladle toward the furnace



One of the Air Melting Furnaces Showing the Hood Over the Fire Door, Which Is at One Side of the Furnace Toward the Front End. The Hood Is Provided to Carry Away Smoke at Times of Firing

instead of the reverse method of bringing his ladle in under the stream of metal from behind. The pouring is entirely by means of hand ladles.

The squeezer type of machine is used, the equipment, including two makes of hand squeezer and four of power squeezer. Metal patterns are employed exclusively with snap flasks and the equipment is regularly inspected to preserve the necessary accuracy in castings. The manner in which one link of the chain articulates with the next admits of practically no variation in the diameter of the end bar while the length of the link must be equally exact, otherwise when made up into chain lengths, the links will tend to buckle on the sprockets. Helpers who, in addition to shifting, shake out the molds, wheel sand and break the links from the gates and risers into a steel barrel in which they are wheeled to the rolling room, are available at whatever floor they may be required. Water is brought to each molder for wetting down his sand and floor, a hose connection being suspended from a swinging jib overhead, one jib serving three floors. The machines are placed directly under the windows where excellent light is always available and where fresh air can always be secured by the workman. Vines have been planted to cover the



The Sand Grinding and Mixing Equipment in the Basement of the Coreroom

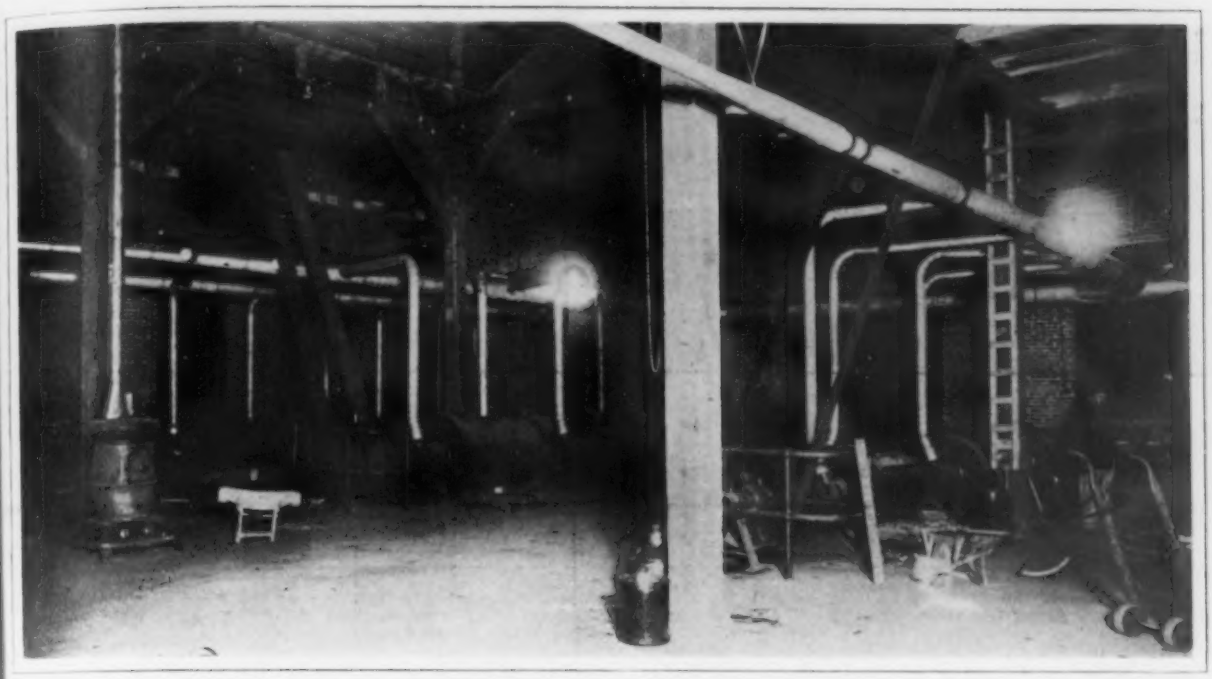
View in the Coreroom Showing in the Background the Battery of Core Ovens and at the Right the Sand Elevator from the Grinding Room in the Basement

buildings so that the outlook for the men will be made pleasant. A locker is provided at each bench for the men.

In addition to its feature of central location, the coreroom presents a number of carefully planned details. The core sand is prepared in the basement. It is discharged directly from cars in the yard above to concrete bins which front on the grinding and mixing floor. A reproduction of a photograph of this floor is shown. Used sand from broken cores is returned from the floor above through a chute directly into a grinder without handling and, mixed with new sand, constitutes a portion of the core sand mixture. The sand is transferred to the bench floor on an electric elevator. This basement also affords space for a coke storage bin, between and below the two batteries of core ovens, the coke being wheeled in from the yard on the main floor and dumped into this bin.

The core ovens, the general type of which is illustrated, are fired from the basement floor. The concrete inclosed basement space also provides fireproof storage for patterns, eliminating the necessity of a specially constructed building for that purpose. The patterns are stored on shelves in

Detail View of the Ovens in the Coreroom Showing the Manner of Piling Cores for Baking



The Rolling Room Where the Castings Are Tumbled

rows and for the lighting of the passageways between an especially economical arrangement has been adopted. A high-power tungsten light with D'Olier reflector is hung at each end, not vertically, but at such an angle that the light is thrown into the aisle from both ends toward the middle. Ample illumination is thus attained with but two lights for each long passageway. The main floor of the corehouse is occupied in part also by a machine shop and carpenter shop for general repairs, and a storeroom for miscellaneous stores.

The rolling and trimming rooms which adjoin, are, like the corehouse, in a central location. The rolling equipment consists of four batteries of barrels. In the trimming room, the sorting and inspection benches flank either side of a central gangway which is reached by means of an inclined approach. The pieces are brought from the rolling room in wheelbarrows and run up on this bench runway and dumped onto the bench compartments on one side, where the different kinds of pieces are sorted and trimmed. For grinding the gates from such pieces as require it, there are installed semi-automatic grinding machines. In addition there is a group of standard double-end machines for hand grinding.

The annealing house, because of its wide span, has a steel framing, and a general interior, showing

The Automatic Link Grinding Machine in the Trimming Room

Charging One of the Annealing Furnaces with the Annealing Cart. Immediately in Front of the Oven Is a Vitrified Brick Flooring and Along the Windows Opposite the Furnaces Is a Cement Floor and Between the Brick and Cement Flooring Is a 30-Ft. Width of Creosoted Wood Block Floor

the row of seven ovens, is shown in an accompanying halftone. A unique feature of the building construction is the use of three kinds of flooring in the space from in front of the furnaces to the opposite wall. Immediately in front of the annealing furnaces there is a vitrified brick floor 20 ft. wide, used as a cooling floor, on which the hot annealing pots are placed when they are drawn from the furnaces. Adjoining this and for a width of 30 ft. there is a heavy creosoted wood block floor which is used for dumping and packing pots. Beyond the creosote block floor and extending to the wall for a distance of 20 ft., there is a cement floor which is used for trucking and storing materials until they are packed for annealing.

The general design of the annealing ovens, their size, the double firebox arrangement and the system of heat distribution are apparent from the illustrations. For casting the annealing pots a small isolated foundry is provided connected with the annealing house by a broad brick roadway so that the power charging machine can be used for transferring the boxes to and fro. The features of this foundry are shown; the cupola is a 36-in. stack.

The Belmont plant was designed and constructed by W. I. Ballentine, superintendent of the Indianapolis plant. Ground was broken April 14 and the plant placed in operation on December 15, 1913. The work was done entirely by regular labor employed by the company.

After 50 years of manufacturing, principally set, cap and machine screws, the well-known firm of Reynolds & Co., New Haven, Conn., announce its retirement from business. It is the intention of the firm to dispose of its plant, stock of screws, machinery, etc.

Charles E. McInnes & Co., iron and steel merchants, 30 Church street, New York, have heard from their representative, now traveling in Japan and China, that the prospects are very encouraging for a large business with American manufacturers.

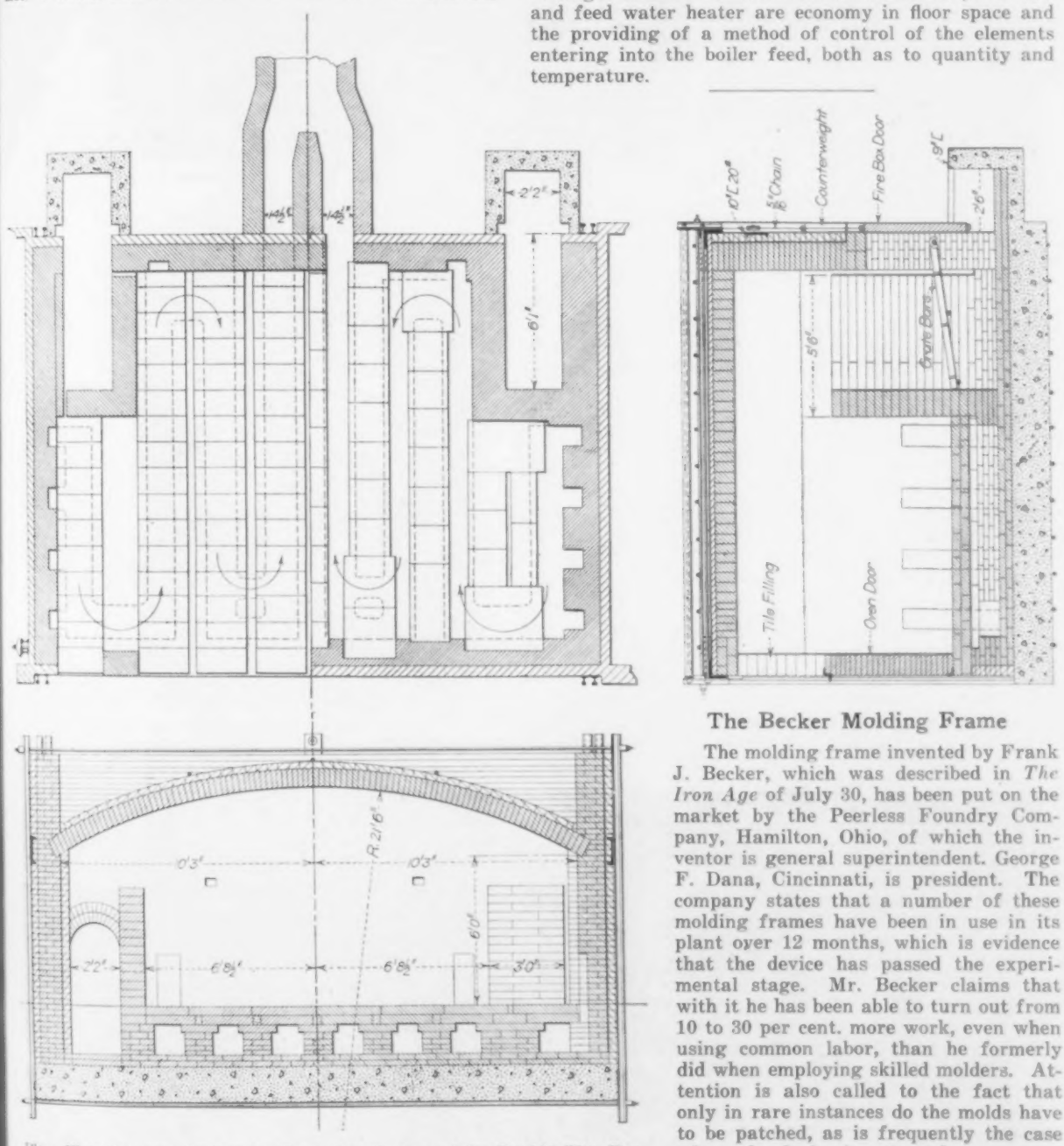
Interior View of the Annealing Pot Foundry

Novel Application of Liquid Meters

A somewhat interesting application of a recording liquid meter to a power plant equipped with fuel economizers has been made by the Yarnall-Waring Company, Chestnut Hill, Philadelphia, Pa. The plant in which this application has been made has standard type water tube boilers and the products of combustion discharge through economizers on the way to the stack. The engine room is equipped with horizontal turbine-driven generators with a surface condenser of the ordinary type with air, condensate and circulating pumps, all of which are driven by turbines. The boiler feed pump which takes its supply from the combined Lea V-notch meter, heater and the hot well and discharges into the fuel economizer also has a turbine drive.

The meter measures the various elements going to make up the total amount of water fed to the boilers. There are three meters which are built in and form a part of the hot well of the plant. One of the meters receives the water of condensation from the turbine and thus measures the steam consumption of the generating set while the second unit receives the water of condensation from the turbine and the surface condenser, the third meter being employed to measure and control the make-up water.

A balanced control valve, which is connected with the make-up water line, is operated by float and lever from the water level of the hot well below the meter. If there is not sufficient water of condensation coming back from the surface condenser to feed the boilers, the lowering of the water level in the hot well is relied upon to open the make-up water valve. The supply of feed water is taken directly from the bottom of the hot well by the feed pump. To raise the temperature of the boiler feed water to the proper figure, for entering the economizers, approximately 150 to 160 deg. F., a tubular heater has been introduced in the hot well. This receives exhaust steam from the boiler feed pump or some other auxiliary. Among the particular advantages claimed for this combination meter, hot well and feed water heater are economy in floor space and the providing of a method of control of the elements entering into the boiler feed, both as to quantity and temperature.



Plan, Elevation and Section to Show the Design of the Double Fire Box Annealing Oven

The Becker Molding Frame

The molding frame invented by Frank J. Becker, which was described in *The Iron Age* of July 30, has been put on the market by the Peerless Foundry Company, Hamilton, Ohio, of which the inventor is general superintendent. George F. Dana, Cincinnati, is president. The company states that a number of these molding frames have been in use in its plant over 12 months, which is evidence that the device has passed the experimental stage. Mr. Becker claims that with it he has been able to turn out from 10 to 30 per cent. more work, even when using common labor, than he formerly did when employing skilled molders. Attention is also called to the fact that only in rare instances do the molds have to be patched, as is frequently the case where the device is not used.

Owing to the sinking of a scowload of stone in the channel of the ship canal, Black Rock harbor, Buffalo, four of the Wickwire Steel Company's ore carriers en route to the company's plant on the Niagara River, have been held up until the channel can be cleared. Because of the announcement that the ship canal and lock would be open for traffic July 27, ore carriers due after that date were laden more heavily than formerly and cannot proceed through the Niagara River channel heretofore used without lightering. The new ship canal around the rapids in Niagara River opposite Buffalo permits of loading to 14 ft. draft.

Theory and Practice of Sherardizing

What the Equipment Comprises, What Are the Steps in the Procedure and What Must Be Looked Out for to Secure Success

BY SAMUEL TROOD*

A small typical sherardizing plant is here illustrated. The material sherardized in this case would probably be bolts, nuts, washers, small malleable cast-iron articles, small castings and forgings and all small or medium sized iron or steel pieces that would pass through an opening 10 x 36 in.

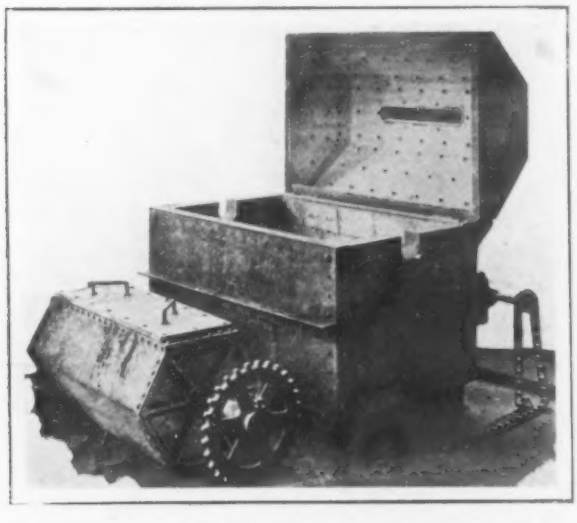
As is often the case with small plants, the articles are cleaned by pickling. If a sufficient amount of cast and malleable cast iron are handled it might be advantageous to use a sand blast for removing the dirt, rust or slag, but when castings form only a part of the work they can be treated according to the following specification.

PICKLING OF CAST IRON

Lye—Cast iron and malleable cast iron should be thoroughly washed in the lye solution, the strength of which must be about 38 lb. of lye to each 100 gal. of water. Care must be taken that no washed-off oil or fat is allowed to float in the tank, and skim as frequently as possible. When the solution becomes greasy or brownish in color it should be renewed. If the tank is kept in use, the renewal should take place every other day. The material must be kept in the solution 5 to 10 min., and drained in the basket. If the material is covered with dried out oil, it should remain in the solution for a longer time.

Wash—Wash in hot water and drain.

Acid—Place in the hot hydrofluoric acid solution long enough for foreign substance to be removed or dissolved. The strength of this solution should be about 5 per cent. in which 15 gal. of 30 per cent. commercial hydrofluoric acid should be used to each 76.5 gal. of water. The pickling qualities of this solution can be determined by its density and its color. If a hydrometer is used the solution should be about 1.026 at 80 deg. C. If the solution should happen to be clear and its density less than the stated value, acid should be added to maintain its strength. If the color of the solution changes and appears brownish, the solution should be renewed, for the acid in this condition coats the material with a coloidal brownish deposit. Drain the material in this solution.



Typical Small Type Sherardizing Furnace and Drum

Wash—Wash in hot water and drain.

Lime—Place in a lime solution, which will neutralize any acid that still remains on the material. The strength should be about 20 lb. of either quick-lime or air-slacked lime to each 100 gal. of water. When the solution changes from a milky to a brownish color, it should be renewed. The material should remain in this lime solution for at least 5 min. and then drained.

Loading and Unloading Device and Dust Bin and Conveyor As Used by the Ohio Sherardizing Company, Cleveland, Ohio

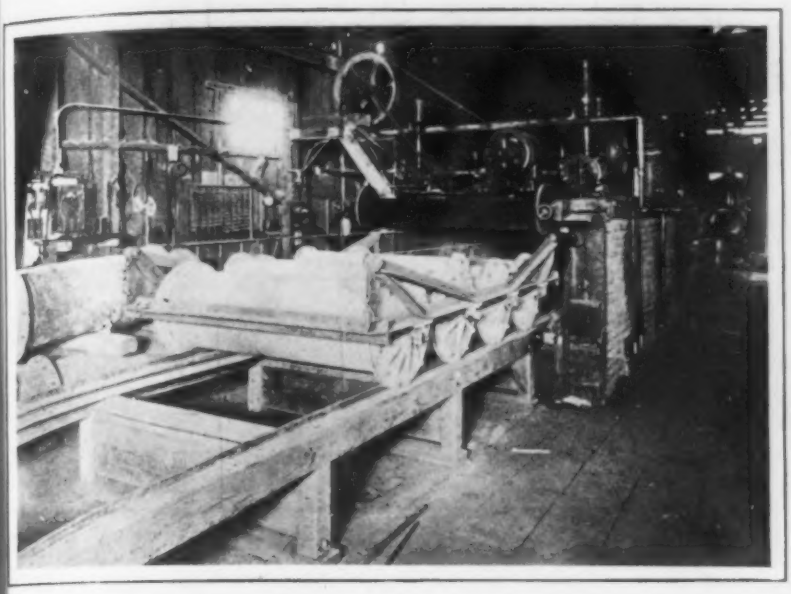
Wash—Wash in hot water and drain. From time to time litmus tests should be made in this water tank and when the water shows acid reaction it should be renewed. In case flaky sediments occur in this tank it is advisable that the drain be opened at different periods to remove them, since they are heavier than water and cannot be washed out by the inflowing water. Usually the tank may be drained twice a day.

Drying—Empty the material on the inclined screen for drying.

The temperature of the acid and alkali solutions should be 60 to 80 deg. C. The temperature of the water baths should be 70 to 90 deg. C. Fresh running water should be allowed to enter each water tank in order to keep it clean. Before each renewal of water, alkali or acid solution the tank should be thoroughly cleansed.

During the pickling process the baskets of material should be shaken and dipped several times into the solution in order that the tightly placed material may be benefited by it. Cup-shaped material should be stacked in the basket in such a way as to contain as little acid as possible. In case the

*Consulting engineer, New Castle, Pa. What sherardizing really is, defining the process for the first time in a satisfactory way scientifically, was described by Dr. Trood, in *The Iron Age* of July 23. In the last issue he discussed practical points in operating a sherardizing plant.



Drums in the Plant of the John Finn Metal Works, San Francisco, Are Rotated by a Reciprocating Movement of the Carriage from One End of the Furnace to the Other

material should show defective pickling or rust, it should be repickled. In case the defects are slight, sand tumbling can be applied for 10 to 15 min. The material should be put into the sherardizing drum as soon as possible after pickling, to prevent oxidation.

PICKLING OF STEEL

In the case of steel, such as bolts, nuts and washers, the treatment is practically the same as for cast iron, except that sulphuric acid is used in place of the hydrofluoric acid. The articles are placed in the sulphuric acid until foreign substance is removed or dissolved (in some cases this will take from 5 to 8 min.). The strength of this sulphuric acid solution should be about 9.5 per cent., in which 13 gal. of 66 per cent. commercial sulphuric acid should be used to each 78.5 gal. of water. The pickling qualities of this solution can be determined by its density and its color. If an hydrometer is used the solution should be about 1.110 at 80 deg. C. If the solution should be clear and its density less than the stated value, acid should be added to maintain its strength. If the color of the solution changes and appears brownish, the solution should be renewed, as in the case of hydrofluoric acid.

Cleaning material by sand blasting is accomplished by subjecting the material to the impact of fine, clean, dry sand under air pressure of 20 to 80 lb. If the work to be cleaned consists of large pieces that can be handled easily, hose about ¼ to ⅜ in. is used. If the material consists of small articles it is more economical to use a sand blast tumbling barrel. The advantage of cleaning material by this method is that all slag or silica scale is quickly removed, exposing the clean iron. It also eliminates the use of acids, etc., which are very hard to eliminate in porous or lead castings.

SHERARDIZING PRACTICE IN PARTICULAR

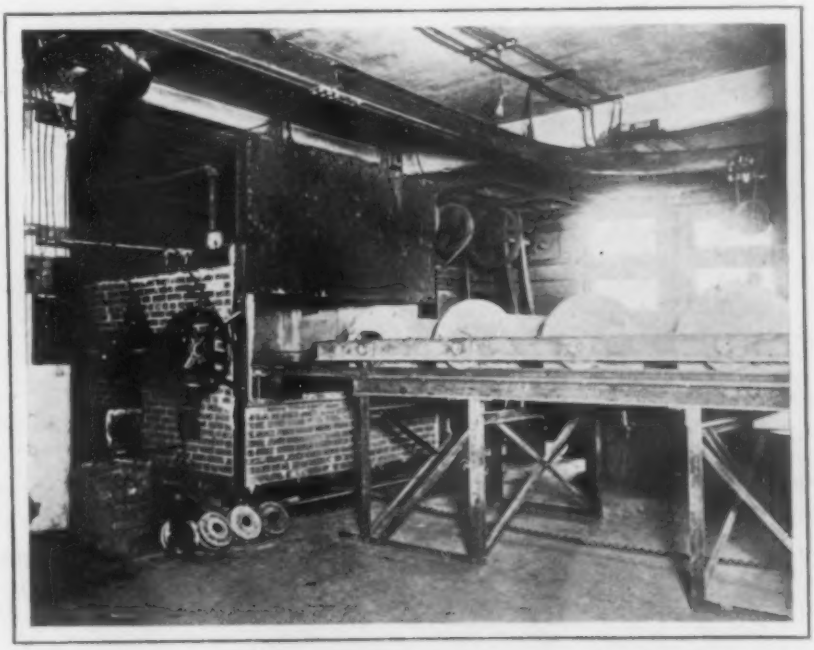
Alternate layers of zinc dust and material should then be placed into the container within a few inches of the cover to allow for any expansion that may take place. From 3 to 5 lb. of zinc dust should be used to each 100 lb. of material. The cover should be made dust tight, not air tight, and the container then removed to the furnace.

If common or blue dust is used, the total run is to be about 5½ hr., of which about 2 hr. must be allowed for attaining a maximum furnace temperature of 440 deg. C. and about 3½ hr. for a temperature of 440 to 450 deg. C. The metallic percentage of zinc should be from 35 to 45 per cent. The drum should be rotated throughout the whole run at about ½ r.p.m.

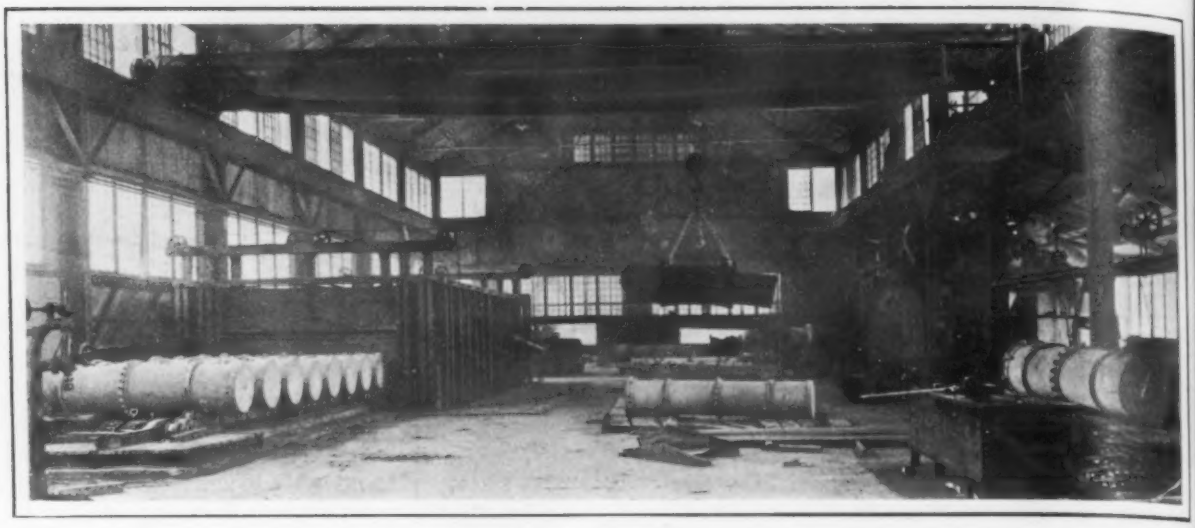
In case Grasselli dust is used, the strength should be 40 per cent. and upward. The total run should be 9½ hr., of which 2 to 2½ hr. must be allowed for attaining a maximum furnace temperature of 385 deg. C. and 7 to 7½ hr. for a temperature of 385 deg. C. The container should be rotated the same as for blue dust.

At the end of the run the container, if blue dust is used, should be removed from the furnace and not opened until the temperature has dropped to 100 deg. C. This will require 8 to 24 hr., depending upon the outside temperature. In the case of Grasselli dust the container can be opened at a somewhat higher temperature. No cooling must be done by application of water or moisture.

The container should be emptied into the unloading pit, which is provided with a grate or screen. This grate should be agitated for separating the dust from the sherardized material. A suction draft is of great advantage for drawing the dust into the dust container and for saving the dust and improving the working conditions.



Type of Furnace Used by the Westinghouse Electric & Mfg. Company and the Union Switch & Signal Company



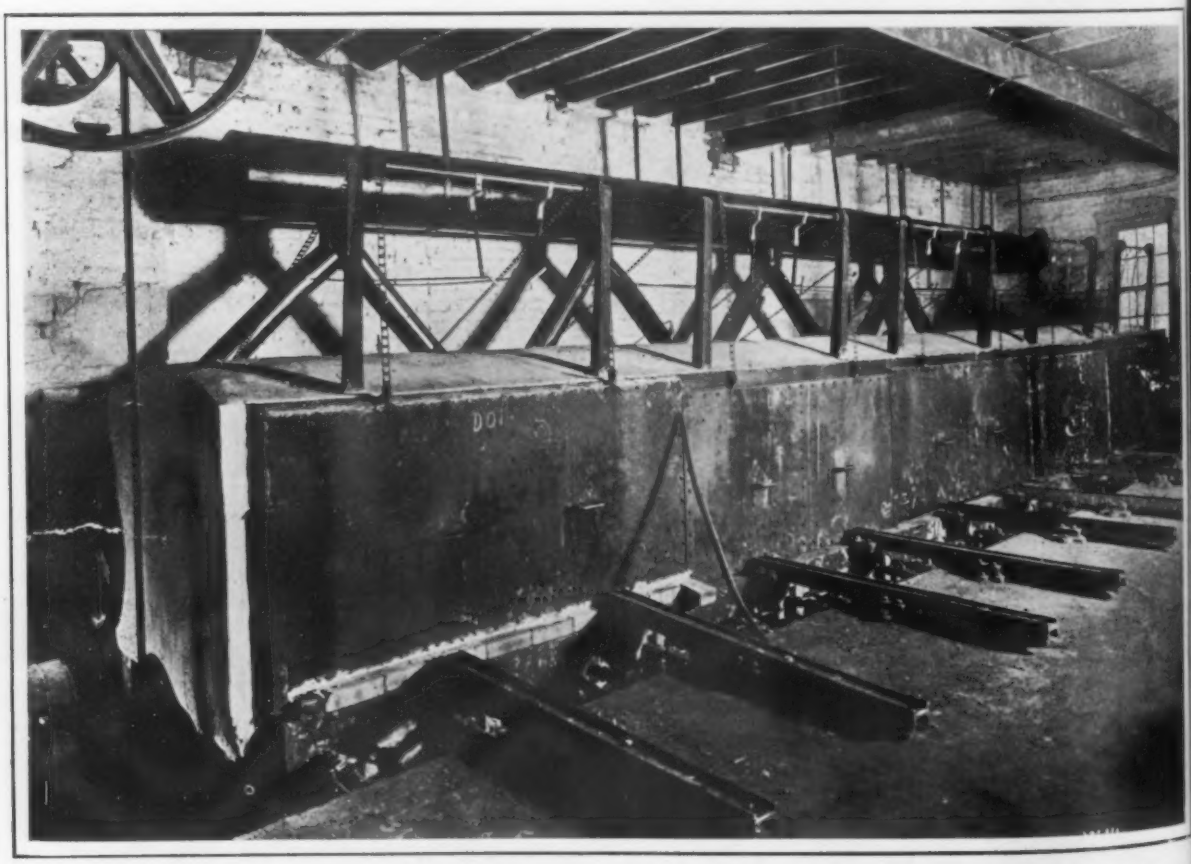
Sherardizing Plant of 100 Tons Daily Capacity, Said to Be the Largest in the World, in the Works of the National Metal Molding Company, Pittsburgh

THICKNESS OF COATING

Careful attention must be given to see that the dimensions of articles, as bolts or nuts, should be such as to allow for enough clearance for the various kinds of coatings. These dimensions, where in normal cases the test is from 4 to 8 dips, should have an allowance for a coating of 0.001 to 0.002 in. For example, if a pin for drive fit is to be sherardized, the difference in diameter between the pin and hole before treatment should be 0.006 to 0.008 in. if both surfaces are sherardized.

When the article sherardized will be subjected to sharp bending or to considerable variations of temperature, the thickness of coating will be limited, for zinc, being more brittle and having a different coefficient of expansion than iron, will separate from the iron under these extreme conditions if too thick a coating is applied.

The smooth, tough, adherent coating obtained by this process makes it adaptable wherever the articles are to be subjected to considerable wear and abrasion, the thickness of the coating being predetermined according to the requirements. As said before, sherardizing takes place over a wide range of temperature, making it an ideal commercial process in respect to large margins of time, temperature and pressure. Perhaps the greatest advantage of sherardizing, which makes it adapted where other processes are impractical, is the fact that it gives a uniform coating over the entire surface, such as the inside and outside of hollow articles, on the threads of pipe, bolts and nuts and on woven wire cloth. Its gray uniform color makes a pleasing and attractive appearance, but if desired it can be used as a sub or under coating to which paint or enamel will readily adhere. Because of its



A Five-Compartment Furnace, Taking Drums 18 x 60 In. in Size, as Installed in Plant of the American Tap Bush Company, Detroit. The Furnace Is Constructed to Take Material 18 Ft. Long

great adhering and alloying properties with the iron, this coating makes a very desirable basis or intermediate coating when plating upon iron with such metals as copper, tin or nickel.

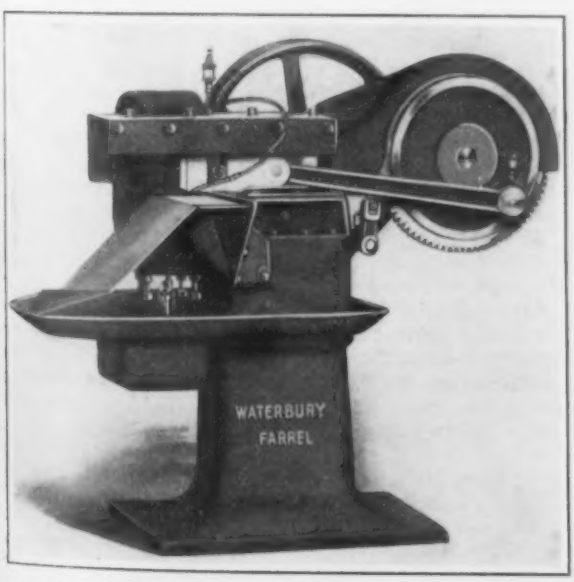
According to Prof. C. F. Burgess, of the University of Wisconsin, if a sherardized surface is scratched by a file and exposed to the alternate action of air and water, rust will form in this scratch, filling it up and bridging it over and apparently bringing the action to a stop. This rust comes from the iron liberated from the electropositive coating rather than from the underlying iron. Thus, a defect in a sherardized coating apparently tends to heal itself over.

From a report on sherardizing by Dr. A. S. Cushman, it appears that a sherardized zinc coating contains about 30 per cent. of iron. After the coating has weathered for some time it becomes dull black and on analysis of this outer layer, it is found to be magnetic. From this and other observations he came to the conclusion that the black surface which appears on sherardized articles is due to the formation of the black magnetic oxide of iron Fe_3O_4. In his opinion the homogeneous, velvety black surface of magnetic oxide distributed over the underlying iron or steel is one of the most valuable features of the sherardizing process, and that the protection effects are due more to this black magnetic oxide than the zinc.

(To be continued.)

Thread Rolling Machines for Spokes

The Waterbury Farrel Foundry & Machine Company, Waterbury, Conn., has brought out a line of machinery for heading, bending and threading the spokes used in the wheels of bicycles, motor-



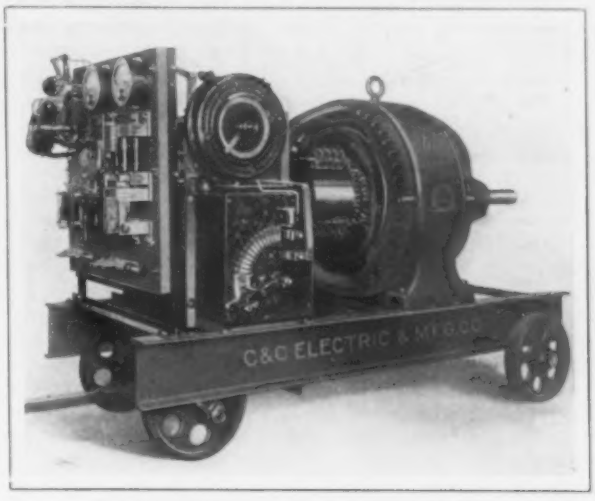
A Machine for Rolling the Screw Threads in Bicycle, Motor Cycle and Automobile Spokes Equipped with a Side Feed

cycles, automobiles, etc. In general construction these machines are the same as the builder's standard screw thread rolling machines which have been illustrated in *The Iron Age*, January 6, 1910, and February 5, 1914, with the exception that they are built so that the work can be fed from the side of the machine instead of in a vertical position. This side feed is used for roll threading the ends of the spokes.

In operation the spokes are placed on the table at the side of the machine in a horizontal position and are fed one at a time to the threading dies, which roll the required thread. After the operation has been completed, the spoke rolls down the incline and is taken from the front of the machine. Several sizes of the machine are built for handling spokes ranging from 3/32 to 3/8 in. in diameter.

A Portable Type of Arc Welding Machine

For handling welding and repair work in shipyards, machine and locomotive shops and foundries, the C & C Electric & Mfg. Company, Garwood, N. J., has developed a portable arc welding machine.



A Portable Arc Welding Machine Designed for Use in Shipyards and Machine Shops

It is claimed to possess all the features of the larger stationary equipment. The motor circuit can be connected to the nearest available outlet of the shop or yard lighting or power circuit, thus adding to the usefulness of the outfit.

An I-beam base is employed to support the apparatus, which consists of a dynamotor, control devices and a switchboard, and the base is mounted on a heavy wheeled truck. The dynamotor, which is wound for 110 volts at the motor end, will develop 200 amperes at 70 volts at the generator end. The use of this machine is not confined only to locations where electric current is available, as the motor shaft is extended to receive a pulley for a belt drive from internal combustion or steam engines when the machine is mounted on a barge or at any other point where current cannot be easily secured.

The starting box and the field control rheostat are mounted on the structure supporting the switchboard which carries the main line switch and motor circuit breaker and the automatic control relays for two individual welding circuits. These relays cut out and insert a small amount of steadying resistance when the arc is drawn, and their use is relied upon to prevent burning of the metal. An additional feature of the machine is the use of automatic devices to prevent interference between the operators. An ammeter connected in the welding circuit enables the current to be adjusted to suit the requirements of the work in hand.

Either graphite or metallic electrodes can be employed with the machine. The former gives a temperature of about 4000 deg. C., and is employed for cutting, preheating and welding with an auxiliary bar while the metallic electrode employed for welding furnishes the metal required directly and can be used on either vertical work or that which is over the operator's head.

Germany's Advance as an Industrial Power

A Cleveland Machinery Manufacturer Discusses the "German Inspiration" and Reviews the Growth of a Generation

On his return to Cleveland in June, after a European trip of two months, Frank A. Scott, secretary and treasurer of the Warner & Swasey Company, addressed the Cleveland Advertising Club on "The German Inspiration." What he said was prompted in part by his recent observations and study of German commercial and industrial methods, and it has special timeliness in view of Germany's decisive part in the astounding developments of the past week. We make extended extracts from the address below:

The German empire that we now deal with, and the German Empire that is going to teach us, is teaching us, many things, and that will be the most interesting subject for business men and statesmen during the next 25 years, dates from 1871. I want to give you a suggestion of the size of Germany as related to a number of powerful European nations, and the United States, and the conditions under which that population lives. Russia, which has the largest area of any of the European nations, has 8,555,000 square miles. Germany comes next; but note the difference—208,000 square miles. Germany has an area about equal to Indiana, Illinois, Wisconsin and Michigan. France has 207,000 square miles, and England 121,000—that is, the British Isles. Russia has a population per square mile of about 19; the United States (and you will note that our population seems scant) has 32; France has 191, but Germany has 311. Just as soon as we know that, if we know anything about the Germans, we know we have a condition of compression which is going to grow so great that it must find relief.

And that is where the difference in policy came between Bismarck and the present Emperor. Bismarck had unified Germany. His mind rested largely on the idea of a centralized and a unified Germany; whereas the present Kaiser has seen the need for expanding the boundaries of his country, for finding places where the force and energy that have been developed by the German schoolmasters can find expression under other suns than in Germany.

Such a population as 311 per square mile presents a great problem in the feeding of the people. In most European countries where the population is so dense, the importation of food products is a necessity. England is a very marked example of that. England imports grain from a number of countries. She imports meat largely from this country and from Australia; her dairy products from Denmark, Finland, Norway and Sweden. Germany has developed her power to feed her people within herself, and has applied the wonderful science of that country to the problem of taking care of the population within her own boundaries.

INTENSIVE CULTIVATION OF THE SOIL

I want to give you the inspiration of the agricultural figures of Germany, that show by what means she has accomplished this. In 1881 Germany raised of wheat 1397 lb. per hectare, about 2.47 acres; in 1913, 2596 lb., an increase over the same acreage of 85.8 per cent. Rye in 1881, 1199 lb.; in 1913, 2100 lb.—increase 75.2 per cent. Oats in 1881, 1331 lb.; in 1913, 2409 lb.—increase 81 per cent. Potatoes in 1881, 11,869 lb.; in 1913, 17,446 lb.—increase 47 per cent.

Perhaps we would be interested to see how these figures compare with those for the United States. During the same 30-year period our yield of wheat per acre changed from 13.1 bushels to 13.9 bushels; of rye, from 13.9 bushels to 16 bushels; of potatoes, from 91 bushels to 93.8 bushels. The corn acreage of our country has increased tremendously in the 30 years, but my recollection is that we produce just as many bushels per acre today as we did 30 years ago.

You gentlemen are perhaps thinking that our conditions are different; that there is no reason in the United States, or at least there has been none, for the adoption of the intensive methods of cultivation which Germany has adopted. And that is so. I want to say, after quoting the American figures, it probably has been better for us with our tremendous acreage and with the great amount of virgin soil that was available to the American farmer, to handle a vast acreage, but without such intense cultivation. In fact, with our scanty population, such intense cultivation is impossible. But the German figures are interesting to us as showing what can be done by a diligent nation on a naturally poor soil in rigorous climate.

Germany has met these agricultural problems by applying to them scientific methods in her drainage, in irrigation, and particularly in the use of commercial fertilizers. The consumption of commercial fertilizers in Germany increased from 1,600,000 metric tons in 1890 to 6,000,000 tons in the year 1910. There is an interesting thing about these commercial fertilizers. The German pig iron production has increased tremendously in these 20 years. By what is called the Thomas-Gilchrist process they were able to use high-phosphorus pig iron in steel manufacture, and the resulting slag was very rich in phosphorus. Grinding that up gave a product that they called Thomas phosphate flour; and today millions of tons of phosphate flour is used on the lands of Germany. So she not only increased her ability to produce steel but increased her ability to produce potatoes by using the invention of Thomas and Gilchrist.

See how this has reacted in other industries. In 1882 Germany used 344,000 threshing machines; in 1907, 1,435,000. There has been some work in the meantime to produce that difference. In 1882 there were 19,000 mowing machines in use and in 1907 301,000.

REMARKABLE INDUSTRIAL EXPANSION

The population of Germany about the time of the formation of the empire was 44,000,000 approximately. Today it is 60,000,000. This immense growth in population, and particularly the crowding of the people into the cities—for in that respect Germany has had the experience of all civilized nations—the crowding of people into cities has necessitated the development of industries to employ those thronging workmen. So Germany is changing as other nations are from an agricultural to an industrial nation, but she has responded remarkably to this need.

Because my subject deals particularly with foreign trade, I am going to confine the figures of growth to a few dealing with the exportation of industrial products. The highest on Germany's list, the product in which she has advanced most, from 1883 to 1912, is machinery of all kinds. The value in 1887 of machinery exported was 52,800,000 marks; in 1912 it had risen to 630,300,000 marks. Coarse and fine iron products rose from 96,000,000 marks in 1887 to 581,000,000 marks in 1912. Coal exports from that small country rose from 79,900,000 marks in 1887 to 436,600,000 marks in 1912. Coke exports in 1887 were 9,000,000 marks; in 1912 they were 126,000,000 marks. Cotton, woolen and silk goods increased from 261,000,000 marks in 1887 to 966,000,000 marks in 1912. These figures explain to all of us who have been in countries where we seek foreign markets why we find the German there, and we do find the German there, and he is there very strongly entrenched and he deserves it.

THE GERMAN MERCHANT EVERYWHERE

I remember years ago, I think it was 1907, when my interest in the German was first excited. It was because in Mexico I noticed in every one of the 24 cities and towns visited on the trip, if you inquired for the hardware merchant or the leading man who could speak English, you were pretty sure to find he was a German. Their volume of business in Mexico I think is not equal to that of Great Britain as yet; I will say it again, *as yet*.

In 1887 Great Britain stood first in pig iron production, the United States second, and Germany third. Today the United States is first, with 31,000,000 tons in 1913, Germany second, with 17,000,000 tons, and England third with 10,000,000 tons. The total pig iron production of 1913 of the world was estimated at 75,000,000 tons, and of this Germany, with her poor ore, produced one-fourth. Today Germany ranks second in steel production, third in coal production, third on 208,000 square miles in the production of wheat and rye, and second only to the United States in the length of her railroads.

Within the period of 25 years, the percentages of increase in foreign trade of the three leading foreign export nations were as follows: United States increased 208 per cent., Germany 185 per cent., United Kingdom 119 per cent. And those are the figures with which I want to prove my point, that today we must look, not to our former teacher, England, for inspiration in foreign trade, but to Germany. And we shall have to work very hard, in my opinion, even with a gain of 208 per cent. compared with 185, to retain our position during the next 25 years. And all of us who have an opportunity to contribute to that will have to take the subject seriously, or when we read these figures 25 years from now, Germany will be at the head and not the United States.

MILITARY TRAINING

I think every student of the industrial problem in Germany will agree in the great advantage which Germany has in her military training. The influence of two things it seems to me is particularly marked in Germany—the German schoolmaster and the German drillmaster. Of course, to begin with, Germany is a Christian nation. I think that helps, and I am founding everything else on that. You know that until within a few years most of the men who grew to maturity in Germany served in the army. Now their population is increasing so rapidly that they do not have to be as severe in the selection of men. Of the total number offering they select fewer today than they did some years ago; but nevertheless the great bulk of the male population of Germany for a hundred years has been trained in the German army. I believe you can see in every man in that country the effect of training in habits of discipline, self-respect and honesty. In that particular Germany has a lead over both England and the United States, and this probably we will be many years in overcoming, if we ever adopt such a system.

NOT A MENACE

I have read and I have heard it said that this tremendous growth of German industry and commerce constitutes a menace to American trade. Personally I do not reason that way. Opposition strengthens us. Our competitor is our helper. I would prefer to find an inspiration in what Germany has done rather than a menace. If the Germans are expanding their foreign trade at the expense of other nations, it is because they, more than any other nation, have planned their work. The question is, Did they attain this great force as a commercial and industrial nation through, for instance, great natural resources? The answer must be, No. I have shown you that Russia and the United States both have natural resources greatly in excess of Germany. Have the Germans reached their position by reason of the fact that they were able to qualify under Sir Walter Raleigh's doctrine that "whoever commands the sea commands the trade"? The answer has to be, No. Germany has never commanded the sea. It has been true up to this time at any rate, according to my reading of history, that whoever commands the sea commands the trade. When Portugal commanded the sea she commanded the foreign trade; while Holland commanded the sea she commanded the foreign trade. Today England commands the sea, and she is the greatest export nation at this time. Germany is second in sea power, and she has never tested her naval strength with any naval competitor. It may be that the future has in store such a test, and if it comes and Germany goes to the front in that test, Germany will surely command the world trade. We will take whatever position is assigned to us at that time.

GERMANY'S POWER ON WATER

I am not speaking today as a jingo, but speaking only as an American business man may. I want to quote to you a paragraph from a pamphlet written by Dr. Karl Helfferich, director of the Deutsche Bank, which he wrote in celebration of the present Kaiser's 25th anniversary. This deals particularly with the relation of the German naval power to foreign business:

> German economic life is conscious of being strong enough, in times of peaceful competition, to maintain and strengthen its position. But the temptation for a strong nation to make use of its political and military resources against a weaker one in the struggle of economic competition has at all times been very great. The numerous wars over commerce in the history of the world give evidence of this. All the progress of culture and civilization in the life of the nations must not deceive us and cause us to forget that any too-sharp divergence in the development of economic strength and political power creates a tendency toward a violent explosion and reestablishment of equilibrium. Knowing this, Germany, which is compelled by its geographical position and its experience in history to maintain a land-army equal to all contingencies, had also to decide to protect its ever-growing and expanding economic relations over the seas by building a navy strong enough to nip in the bud any temptation, on the part of any enemy, to crush our economic competition by force. Our navy, the creation of our Emperor, is, in this sense, the keystone in the mighty system to which is due the extraordinary development of wealth in Germany, and which today constitutes the basis for the existence of the German people.

I give you that paragraph to think about some time when you are reading a discussion on the one battleship programme in Congress or when you have presented to you what was presented to me the other day, the idea of an agitation to do away with all appropriations for battleships and have the government contribute the amount to sustaining and educating babies in the United States! That is not a joke; there is such an organization in existence in this country.

AMERICAN AND GERMAN ADAPTABILITY

Many American manufacturers who have good foreign trade have treated it as most of us do our greatest blessings, as a thing to be accepted as a matter of course, without thankfulness to the giver, and to be forgotten and neglected as soon as anything nearer at hand attracted attention.

American goods for the most part have been designed and manufactured to meet the American market, and when we ship them abroad, we ship them according to American design and manufacture, and to meet American standards. So long as they meet the need of the foreigner, and so long as he is unable to supply that need from another source, in our lines, of course, he buys them from us; but as soon as he can find some one who will meet his wishes in the design and manufacture of the goods, he finds a new market.

Germany deserves first rank in her willingness to meet the wishes of the customer, in her versatility in reaching the market and in satisfying the customer, and in the interest which she shows in all the questions which pertain to the economic life and development of the customer. I am sure any one in this room who has been in the Far East or in South America, or in Mexico, or any of the countries in which German competition is now becoming very strong, will agree that in shipping facilities, in banking facilities, in social touch with the customers, Germany is rapidly becoming the leader.

GERMAN GOVERNMENT AIDS

Price Collier, referring to the English and not to the

Americans—but it would apply almost as well to the American manufacturer as to the English—said: "The attitude, wherever you find him throughout the world, is, 'This is my way, and it is the right way, and it is God's way, and God is the God of the English established church.'" To some degree that has been the attitude of American manufacturers in meeting their foreign customers.

Germany has followed the absolutely paternalistic system in developing her foreign trade, and England has followed the individualistic system, and we have very largely followed England. We do not demand to the degree that the Germans do that the government throw the whole weight of its influence and power into the development of our foreign trade. The Germans have assisted their development by their consular system, foreign steamship lines, foreign banking systems, rebates in freight rates on government railroads, when those were necessary to enable the manufacturer to reach a foreign market. Those things we have not had, as coming from our government, except the assistance of our consular service, and most of those things we would not want from our government.

The kind of prosperity that this development has brought to Germany is material prosperity. I realize that I am dealing only with material prosperity, and that to sneer at commercial prosperity is now regarded not only as safe, but as patriotic. But this does not change the fact, nor will it ever change the fact, that commercial prosperity means work for the idle, food and shelter for the needy, hospitals for the sick, schools for the ignorant;; and whatever attitude of mind we and the remainder of the American public may get into today on the subject of business, we will pass beyond that and realize that, while we want it conducted righteously, yet it must be conducted and it will be conducted.

It seems to me that in this uncertain and quiet time we must make our plans for the busy time that is absolutely sure to follow. Very little that is unpatriotic is being done in this country. Most of the agitation that disturbs us, and that we fear, is by men who believe they are doing what is right. We as Americans cannot believe that America has come to the end—that she will never be greater than she is today. We know that we will be greater and that we will be better, and that the successes of the future will be founded upon the successes of the past. And that is why at this time personally I am looking everywhere for inspiration. I believe if there is any danger in our own country, from our own acts, or to our own country by reason of the processes that are going on in other nations, the American business man and the American working man unitedly will find in any peril that menaces us only opportunity.

The Lagonda Mfg. Company's New Factory

A new addition to its large and modern factory is being built by the Lagonda Mfg. Company, Springfield, Ohio, to provide increased facilities for specialized manufacture. It will be of brick and concrete construction, 60 x 110 ft., with a slate monitor roof supported on steelwork. Steel window sash and frame will be used throughout to give a maximum amount of daylight lighting. It is planned to handle the larger and heavier classes of work, such as automatic cut-off valves and multiple water strainers in the new portion of the factory, while the present building will be devoted to the manufacture of boiler tube cleaners and specialties. A 10-ton electric crane with a 36-ft. span will run the entire length of the new building and over the railroad siding to facilitate handling of castings in the shop and for making shipments. Other additional equipment to be installed includes a 34-in. Gisholt automatic lathe and large multiple and radial drilling machines. A 100-hp. gas engine will be installed to supply the necessary power. At the present time the plant is working day and night.

The Northern Steel Construction Company, Buffalo, fabricator and erector of structural steel, has filed a petition in bankruptcy, with liabilities of $21,000 and assets of $12,009.

SPEED IN PIPE THREADING

Important Gain Through Improved Design of Machines.

BY C. A. TUPPER

Almost every superintendent or foreman can recall the time in his experience when there was a good deal of pipe work to be done in a hurry and he speeded up the threading and cutting machines, with results that were anything but satisfactory. This condition continued for many years. The machines available for pipe or bolt threading could be made to do about so much work in an hour, at a speed practically fixed, and that was the limit.

Recently, however, there has been a material improvement in the design and construction of these machines, so much so that a number of the standard makes can be appropriately called "machine tools," along with lathes, planing machines, drill presses, etc. For ordinary shop service the operation of pipe threading machines has increased in the ratio of about 2 to 3, up to say 15 ft. per min. cutting speed; while in pipe threading mills speeds of 25 to 30 ft. per min. are not uncommon, particularly for pipe diameters not exceeding 3 to 4 ft.

METHODS OF INCREASING SPEED

In accomplishing this, one manufacturer uses shafting of exceptionally large diameter and machine cut steel gears having wide faces. The latter operate through oil in a tightly inclosed gear box, which not only permits the tool to develop high speed but reduces the wear to a veritable minimum. Provision is also made in the best standard designs to give each machine an ample speed range for the work within its capacity, so that a speed can be selected by the operator, after due practice, to suit the diameter of the work and the material being threaded. This can be most readily taken care of where the machine is electrically driven from a direct-connected variable-speed motor, thus permitting uniform surface speed to be obtained for any diameter within the range of the machine and to any extent in reason, depending upon what the threading chasers will stand. This naturally varies according to the steel of which they are made. If of high speed steel, the speed maintained can be considerably greater than where carbon steel chasers are used.

It is an advantage to have the chasers deep enough to cut a full thread on any kind of pipe at one cut, and more than usually full. For example, the chasers used on one of the best machines for cutting 8-in. pipe are eight in number and will cut an accurate thread or screw end 2 in. long. This is beneficial in many ways. It enables the cutting of a full taper thread for heavy fittings tapped deeper than the standard, which for that size pipe is only 1.46 in. long, and it also allows the entrance of chasers to be repeatedly ground and still leave enough depth for a standard thread. Ordinarily, of course, all pipe is threaded to Briggs gauges.

DIE MECHANISM

The design of the mechanism for controlling the die is also important. Looseness, which has too often been a feature of this, can be avoided by eliminating any direct connection with the adjusting screw. In one modern type the latter passes through a fulcrum nut or block, which is provided with a clamp gib to lock the adjustment. Moving the fulcrum block to the left, by means of a handwheel on the end of the adjusting screw, contracts

the chasers radially, while by turning to the right the threading diameter of the chasers is increased.

Provision should also be made in the design for withdrawing the chasers from the pipe as soon as the operating lever is raised, so as to prevent any grooves from being gouged across the threads; also for sliding the die head aside before cutting off the pipe or removing it from the machine, thereby guarding against injury to the bottom chasers from having the pipe dragged across them.

Adjustment of the chasers should be practicable without stopping or reversing the machine spindle, thereby enabling work to be done, when required, on a miscellaneous lot of pipe of varying diameters; or such pieces as bullhead tees, bell joints, etc., to be handled quickly on the same machine as the run of the pipe.

To secure a good thread, the lead of the chaser, or the angle which enables the die to start on the pipe, should be ground on to cover the first three threads. Furthermore, as the heaviest cutting is done by the lead, it must have a slightly greater clearance angle than the rest of the threads on the chaser. When regrinding chasers that have become dull on the lead, care must be exercised to give each chaser in a set the same lead, as otherwise the work will be unevenly distributed between them. In cutting, also, the use of a good lubricant in liberal quantity should not be overlooked, as even the best dies will not produce good results with poor or scanty oil.

Another important point, and one too often overlooked, is to allow sufficient chip space in the die holder in front of the chaser to permit room for the accumulation of chips and also make provision for the proper lubrication of the chasers. Lack of suitable space will cause the chips to clog and scrape or tear the threads.

CHUCKS

A good arrangement of the cutting head on the carriage is with the die head in front, sliding in ways, so that it can be brought close to the gripping chuck. This enables short lengths of pipe to be threaded without the use of a nipple chuck.

The gripping chuck is commonly made with independent jaws, which permit the adjustment of the pipe to the center. It is quite desirable for these to contain renewable tool steel teeth set into pockets of sufficient depth to hold them rigid. If the jaws of both front and rear chucks project beyond the faces of the chuck shells, it will also be possible to grip short nipples in the front chuck and to screw flanges to pipe by power, by holding them in the rear chuck jaws.

A universal gripping chuck is often fitted to the machine in place of the ordinary or independent jaw type. With this at the rear end of the spindle, a self-centering chuck may be used, doing away with bushings or guides.

For steadying the pipe while it is being cut off, hardened steel V-jaws are commonly used and may be obtained removable, with universal slides. A screw adjustment can be provided to center the pipe in the absence of any other device for the purpose. The cutting-off slide is preferably made with a lathe tool post, so that the burr may be bored out of the pipe by angling the cut-off tool, no reamer being then required.

ECONOMY IN DRIVE

Except in pipe mills or large shops where a great deal of threading needs to be done, the direct motor drive referred to above is hardly an economy. For ordinary intermittent shop service the belt-driven machine connected to shafting in a group with other tools is most economical. The gearing in the head will naturally be arranged so as to secure suitable power and speed for the various sizes of pipe and so proportioned as to approximate a uniform surface speed for each of the different sizes of pipe to be handled. Intermediate speed steps can be obtained with a cone pulley and belt shifter. As many as six spindle speeds often are provided by the gearing alone, with a single face pulley, so that the variations obtainable are numerous.

Where motor drive seems desirable, the additional equipment commonly includes a standard drum controller for forward and reverse speeds, armature and field resistance and main line switch. The speed of the motor, for its normal rated load, should conform to the reduction of the gearing and be selected by the manufacturer of the pipe threading machine; otherwise the surface speeds will be thrown out of line. The above assumes a direct-current motor.

For alternating current the use of a variable-speed machine, which would be of the wound rotor, inserted resistance type, is too expensive for pipe threading work. Hence a squirrel-cage, constant-speed induction motor is preferable, and this will usually be found driving a short line of shafting to which not only the pipe threading and cutting machine but also other tools of general utility are connected. Such an arrangement, however, is usually confined to machine shops serving industrial plants, mines, power and pumping stations, etc.

In ordering pipe for threading, it should be remembered that, while all piping and tubing up to 15 in. is measured by its inside diameter, everything above that size is carded according to its outside diameter, and both the over-all width and the thickness, or weight, must be specified. This distinction, which represents an antiquated and indefensible trade practice, causes a great deal of confusion and loss, particularly when men who have always handled the smaller sizes of pipe are suddenly called upon to specify one of the largest sizes for some special job. Matheson and Kimberly joints are also known by their outside dimensions.

Testing Reinforcing Bars

In a qualitative but not quantitative study of the effects of turning specimens of reinforcing bars, by E. P. Withrow and L. C. Niedner, as presented in a paper before the seventeenth annual meeting of the American Society for Testing Materials at Atlantic City, June 30 to July 3, 1914, entitled "The Use of Turned Sections in Tension Tests of Reinforcing Bars," it is found that there is an increase in the yield point and ultimate tensile strength which may amount to 10 per cent. This is true of constant-section deformed bars and even of plain bars.

This is not due to protection from the grips by the large ends of turned specimens for the following reasons: 1. If the specimens are turned to the same diameter for their full length the increase still exists. 2. The yield points of bars embedded in concrete at each end (the stress being applied through the concrete) agrees, approximately at least, with that of the same bar held in wedge grips. The indications are that the increase is caused by the chemical and structural non-uniformity of the bars. Since the removal of the exterior steel tends to give a higher reported value for the bars than they would develop in service, it is not good practice to allow the machining of test specimens of reinforcing bars.

A Comprehensive Stockroom System

In Use by R. K. Le Blond Machine Tool Company—Stock Clerk's Unique Desk —Details of the New Building

The stockroom of a large manufacturing plant is a source of much trouble and of some expense, direct and indirect, unless a well-organized system of records is maintained. Standard supplies, such as screws, bolts and nuts and small parts which enter into the product, are either over or under stocked. Inventory taking becomes a serious affair, and an efficient system must be simple in order to be economical. Unnecessary complications are expensive. The method of keeping stockroom records in practice in the works of the R. K. LeBlond Machine Tool Company, Cincinnati, Ohio, manufacturer of lathes and milling machines, is typical of the best practice. It originated with S. A. Stevens, who is in charge of the department.

Fig. 1—General View of the New Stockroom of the R. K. LeBlond Machine Tool Company

In the four-story addition to the company's shops, recently erected, the stockroom is located on the top floor. Fig. 1 shows a general view of the department, and suggests the system of storing small parts. The heavier castings that enter into the company's machines are stored on the ground floor. The room has three bays, one of which, where most of the heavier parts are kept, being served by a 2-ton Sprague electric crane. The adjustable steel racks in which the smaller machine parts are carried are seen in Fig. 9. The racks are divided into sections, each having a number which, together with the aisle number, is conspicuously lettered on the end of the rack at the main aisle, as can be seen.

To enter into the details of the system of keeping track of the stock the original record is obtained from the work card shown in Fig. 2. This is issued to the manufacturing division of the works, and, excepting for the information given to the stockroom, has nothing to do with the maintenance of the system of the department. The card used for illustration calls for the manufacture of 60 back gear shafts. This record is transferred to the blank, Fig. 4, which is the report of articles received and binned in the stockroom. It will be noted that the record includes the date of the receipt of the goods, the department which manufactured them, the lot and symbol numbers, the amount called for by the work card and the amount received. In the case cited two of the 60 back gear shafts were delivered to another department, so that the amount credited to the stockroom was reduced to 58. The bin card also gives the location of the rack in which the material is stored. The card is filed under the lot number and is important as a record, because nowhere else in the works is the record maintained by lot number.

The blank known as "Order for finished parts," Fig. 5, is employed when the manufacturing departments wish to draw from the finished stock. In the illustration two friction shifter yokes and one door are required as replacements of damaged parts for the erecting order No. 2503. The same blank is used where the shop returns parts that have not been used, a space for this purpose being provided under the caption "Return." The order contains spaces for its date of issuance, by whom ordered, the

Symbol 15 Portfolio No. Lot № 17082 Shop Order No.

Name Back Gear Shaft

Quantity 60 Machine Size

Date of Order Date from Dept. 23 Date into Factory

Material Foundry Sec. Row Bal.

NAME OF OPERATION.	Dept.	Jig No.	Tools Needed.	Additional Information

Fig. 2

Lot № 17082 Shop Order No.

Symbol
Date
Name
Amount
Replace
Foundry
Weight
Material
Size
Length
Order Filled
Rec'd. Amt.

168 FINISHED STOCK RECORD.

Detail Name Bevel Gear also

Used on 12" 14" 16" Unit Apron

Am't. to each M'ch. 1 Material Steel Casting Weight 5 lbs.

Min. 25 Aisle 29 Sec. 243 Row 7 Bin Max. 100

Date 1914	Am't. Rec'd	LOT NO.	Shop No.	Am't Issued	Del'd to Dep't	Cond'n	Bal. Due	Short'ge Report'd	Bal. in Stock	Amount's Order
1-12									463	
1-30				1	32				462	
2-6				10	32				32	
2-6	62	13223	352						94	
2-13				1	32				93	
2-17				12	32				81	
2-30				24	32				67	
3-15				50	32				17	

Fig. 3

ORDER FOR FINISHED STOCK

Regular: Assemble No. Date: 4-8-14

Special: " " Ordered by Bottick

Repair: " " Delivered to Dep't. No. 28

Replace: " " 2503 Order filled by A-W

Return: " " from Dept. Date delivered 4-8-14 by Fessler

Shop: " " Cards checked by R A Leeds 4-8-14

Issue	SYMBOL No.	Check	NAME	Make	Section	Row	Bin	Bal.
2	3 M 35		Friction Shifter Yoke	4	32	1		10
1	3 M 39		Door	2	11 a Back			30

Fig. 5

Date Received 3-24 1914

Lot No. 432 Symbol 15

Shop No. 75 Size 16"

From Dept. 26

FINISHED STOCK ROOM

Report of Articles Received and Binned

Name Back Gear Shaft

Amt. Ticket calls for 60

Del 2 to Dept 6

Amt. Received 58 Del to Dept

Location

Aisle 30 Sec. 257 Row 1 Basement

Counted by Fessler. Date 3-24

Put away by L-H. Date 3-25

Checked on Record by Leeds Date 3-24-14

Remarks Stock received a little rusty but inspector says will not interfere with use of piece

NOTICE—When there is No Ticket with the goods, write on line "From" what department received, Form 24-B

Fig. 4

FORM 21-A

SHORTAGE REPORT FROM FINISHED STOCK ROOM

Date 3-15 Signed by

Symbol No.	NAME	Size	Balance in Stock	Min.	Max.
B 168	Bevel Gear	12 in	17	25	100

Fig. 6

Form 6-E

FINISHED STOCK ROOM RECORD No. 1601

Screws, Springs, Handles, Keys, Pins, Plugs, Washers, Etc.

GENERAL NAME Special Set Head Cap Screw Hard Soft

LOCATION: Aisle 32 Sec. 287 Row 4B Max. 300 Min. 200

SIZE: Dia. 3/4" Length 1" Length over all 1 1/4 HEAD: Across Flat 7/8

Across Corner 1" Thick 1/4" THREAD: Kind of Thread U.S. Length of Thread 7/8

COLLAR SCREWS: Collar Dia. Thick Length bet. Col. & Head

SET SCREWS: CUP POINT: DOG POINT: Dia. Length

WASHERS: Inside Dia. Outside Dia. Thick

SPRINGS: Wire Guage Pitch Inside Dia. Outside Dia Length

KEYS: Width Length Height

REMARKS:

This screw is made in the shop

Fig. 7

Figs. 2-7—Group of Forms Used in the Le Blond Stockroom

department to which the material is to be delivered, the date of delivery, etc.

The finished stock record, Fig. 3, constitutes the running inventory of every part carried in stock. The blank is furnished in different colors which indicate the nature of the material. That is to say, cast iron and cast steel and so on each has its distinguishing tint. Each lot of finished product received from the shops is entered under the date in the column provided for the purpose, and whenever stock is issued to the works its amount is entered in the proper column. Consequently, the balance on hand is always to be found on the record. The card contains the minimum and maximum of stock, that are predetermined limits which must not be exceeded. In the sample record the minimum of beveled gears for an apron is 25, and the maximum 100. It will be seen that since the 62 castings were received on February 6 the stock has been drawn upon until only 17 remain, which is below the minimum. Immediately upon the issuing of the last 50 pieces the manager of the stockroom notes the deficit and makes out a "shortage report from finished stockroom," as seen in Fig. 6. This goes to the production department and presently the stock will be replenished to an amount not exceeding the maximum of 100. Because of the rapid turning over of such small parts as bolts and screws it is not feasible to carry the records on the regular cards, and instead a loose-leaf system is employed, as shown in Fig. 7.

At the front end of the stockroom is a receiving department where all goods are inspected before they are placed in storage. The stock keeper's office is located in this section of the department.

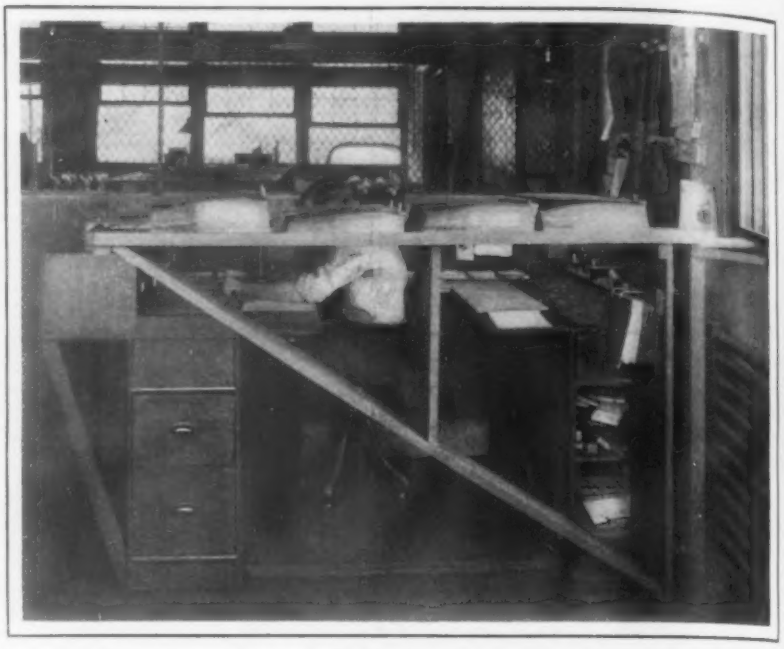


Fig. 8—The Stock Clerk's Desk with Every Record within Reach of His Hand

The desk of the stock clerk, Fig. 8, is a novelty which could be adopted to advantage in many manufacturing plants. It is shaped like a letter U. On all three sides are pockets in which the finished stock record cards are filed vertically. At the open side of the U is a shelf which swings like a jib crane, and upon this are the loose-leaf records of small parts. The clerk has only to swing in his chair to reach every record. The economy of his time is apparent.

The new addition is 100 x 250 ft., four stories, and the construction is of reinforced concrete throughout. The lighting features are excellent. Artificial illumination is furnished from Cooper Hewitt mercury lamps. There are two Toledo electric cranes serving the main bay of the ground floor, and a number of jib cranes act as auxiliaries. Two industrial electric vehicles, made by the Automatic Transportation Company, Buffalo, N. Y., are used, not only in shop, but also in transferring freight to and from the railroad station, which is nearly half a mile away. Although the building is of concrete construction automatic sprinklers are installed throughout.

Fig. 9—The Sectional Racks Installed in the Stockroom

Data on Aluminum

The Aluminum Company of America, Pittsburgh, has prepared several booklets containing valuable information. One is entitled "Fabricated Aluminum," giving data on the properties of some of the shapes, as well as tables covering the weight of aluminum tubing, the safe pressure on such tubing; also aluminum pipe sizes. The advantages of extruded aluminum are also discussed. A second booklet, "Methods of Working Aluminum," deals with its casting, annealing, rolling, drawing, drop forging, etc. Supplementing these two is one entitled "Useful Tables," containing many important tables of gauges, weights, specific heat and gravity, areas and other data.

L. Vogelstein & Co., 42 Broadway, New York, furnish the following figures of German consumption of foreign copper for the months of January to June, 1914: Imports, 116,904 tons; exports, 3,377 tons; consumption, 113,527 tons. The consumption in the same period of 1913 was 109,753 tons. Of the above imports 102,188 tons came from the United States.

Economic Advantages of Special Tooling

Two Applications of Automobile Manufacturing Methods to Machine Tool Building and the Savings Effected Thereby

BY ALBERT A. DOWD

The machine tool manufacturer is somewhat more cautious in his use of special tooling than the producer of automobiles or other appliances, because his yearly production of parts is very much less and therefore the proportional cost of special tools is so much more that he feels as if the production did not warrant the expenditure. Jigs are essential in all cases where interchangeability of parts is desired, but the cost of special fixtures for milling is usually curtailed by adapting vises and other devices to handle the work. On turret lathes used in manufacturing the product, tooling costs are kept down as far as possible, the parts being manufactured by various arrangements of standard tools, the set ups being arranged by the operator under the foreman's supervision. Often these are as good as can be obtained with standard tools, while in other instances there is a tremendous waste in production.

Several years ago the writer was closely connected with some improvements in manufacturing methods in connection with machine tool building, which resulted in considerable savings in the cost of production. Some of the conditions may prove of interest and are given herewith. The piecework prices on a number of the parts seemed very high for the turret lathe work and an attempt was made in this department to improve the conditions governing the output and see if any changes could be made to reduce the time of production. It was found that the assortment of standard tools in the department was very meager and that tools were dull and poorly cared for. This condition was remedied by increasing the supply of standard tools and installing another tool grinding machine so that tools were easily kept in better shape than formerly. The matter of tool set ups was carefully taken up and freehand sketches made of improvements in tooling. Feeds and speeds were increased wherever expedient, and the result of these several changes was a noticeable increase in productive efficiency.

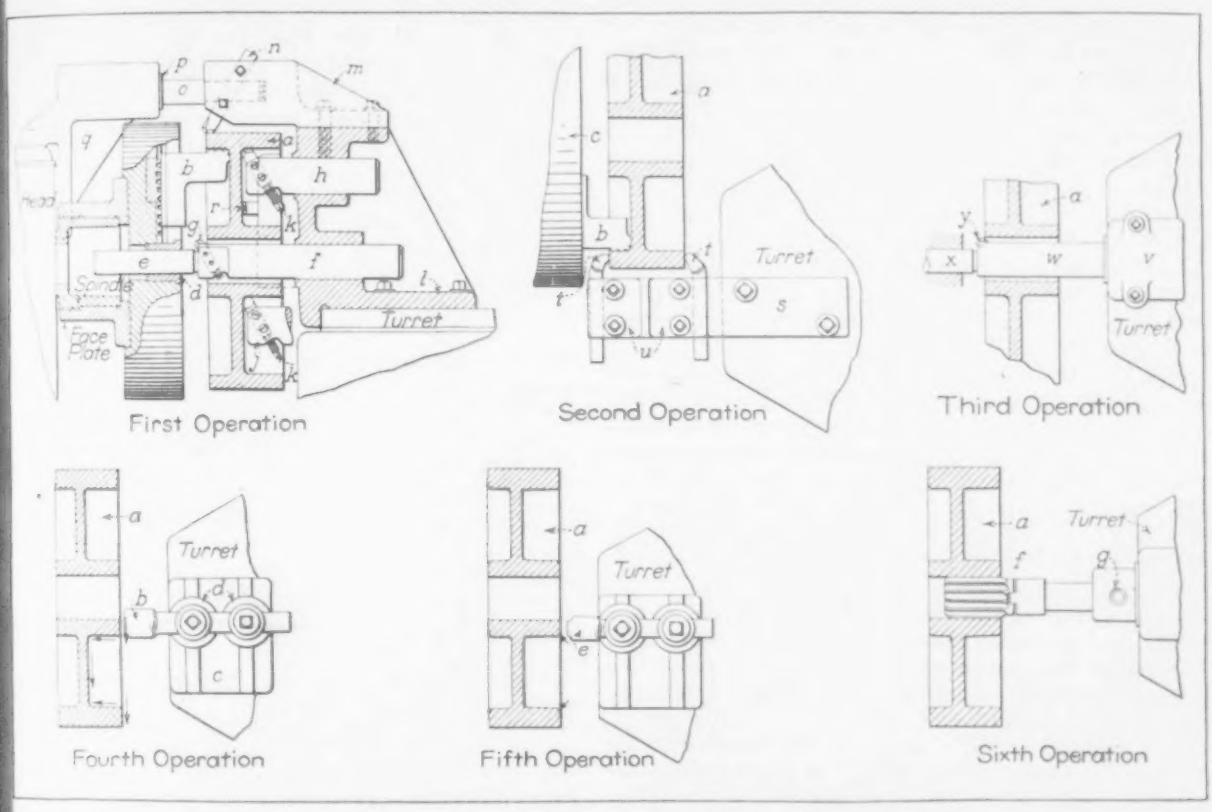


Fig. 1—The Successive Operations in the Machining of a Flywheel

Some of the work which was routed through the factory in lots of 50 or more at a time, and on which the production time was very slow, was now considered with a view to the possibility of special tooling being advisable. Approximate time studies were made of several of these pieces both with and without special tooling, and in those cases where the saving seemed sufficient to warrant the expenditure, special tooling was designed and built.

Fig. 2 shows two of the pieces that were made up in lots of 100 at a time and on which the production time was especially slow. The upper piece is a portion of a friction clutch, the piecework price on which was 60 cents and the machining time in lots of 100 averaged 1¾ hr. The lower piece is a flywheel pulley with a piecework price for the turret lathe work of 90 cents, exclusive of the crowning operation and the cutting of the keyway. The average time on this piece was 2 hr. Both pieces were finished all over, but the portion *a* of the pulley was only roughed out, being afterward painted. The pulleys were made in two sizes: 12 and

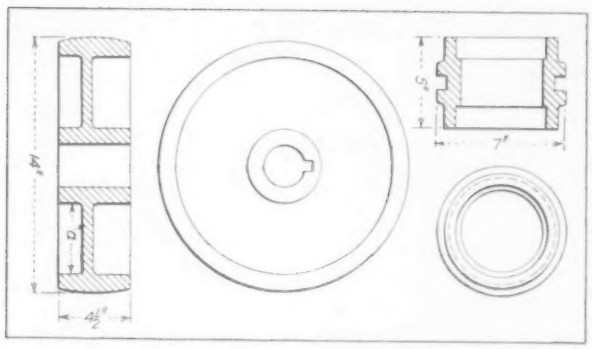


Fig. 2—Two Parts Which Can Be Economically Produced with Special Tooling Arrangements

14 in. in diameter, the other dimensions being practically the same. The clutches were made in three sizes, the largest being 7 in. in diameter and the smallest 5¾ in. Tools were so designed that they could be readily adjusted to various sizes.

The upper left part of Fig. 1 shows a partial longitudinal section through the spindle and the cutter head used in the first setting with the revised method of tooling for the pulley. The type of turret lathe used for this piece of work has both longitudinal and cross feeds to the turret. The work *a* is held by the inner surface of the rim in a set of special jaws *b*, which are cut away slightly to permit back facing. The chuck *c* is of the three-jaw universal geared scroll type and is furnished with a hardened and ground steel bushing, *d*, which acts as a guide for the boring bar. A special casting, *l*, is bolted to the flat face of the turret and acts as a holder for the cutting tools. A supplementary casting is bolted to the upper surface of the holder as shown at *m* in the illustration, and carries a turning tool, *n*, which rough turns the periphery of the work. A bracket, *q*, is fastened to the head of the machine and is provided with a bushing, *p*, in which the pilot *o* of the turning tool is supported. This construction gives great rigidity and lessens the danger of chatter which might be troublesome if the tool were unsupported. A boring bar, *h*, is secured in the holder and is furnished with a tool for boring the inner surface of the rim. A backing up screw, *k*, permits easy adjustment of the boring tool. Another bar of similar construction turns the hub. This bar is shown broken at *j* in a false position in order to avoid confusion in the drawing. Its actual position is 90 deg. from the upper bar. The hole is bored by the tool *g* in the bar, *f*, being supported at the forward end by the pilot *e*. A series of facing tools such as that shown at *r* are set in the face of the body casting in such a way that their cutting edges overlap each other slightly when facing the web. These tools are of round section and are nicked to break the scale. There are nine tools in this group, all of which work simultaneously, thus greatly improving the production time. It will be noted that all the tools except the facing ones are adjustable for diameters and were used for a smaller size of pulley as previously stated. Another bar was provided at *h* for the smaller diameter.

The second operation is that of facing both sides of the rim with the two tools *t* which are held by the clamps *u* in the square bar *s*. The tools and the clamps are both adjustable to a small degree and the cross feed to the turret is used for this operation.

The third operation is that of finish boring the hole with the tool *y* in the bar *w*, having a pilot, *z*, as in the roughing operation. A regular tool holder, *v*, holds the bar securely on the turret.

The fourth, fifth and sixth operations of the first setting are shown in sequence from left to right in the lower portion, very little tooling being necessary for these operations. The fourth operation is that of finish facing, turning and boring the surfaces shown by the arrows. The tool *b* is dressed so that it will cut with equal facility on three sides and it is held on a regular tool holder, *c*, by the two tool posts *d*. Extreme rigidity is secured by this method of holding and there is never any danger of a change in the setting as there might be if a single holder were used. The fifth operation consists of rounding the corners indicated by the arrows with the tool *e*. The sixth operation is that of reaming the hole with the reamer *f* which is held in a floating holder and driven by the pin *g* in a manner familiar to all.

The second setting is very simple and need not be described in detail, the work being held by the turned outside surface in a set of soft jaws. The web was only roughed out in this setting and the hub and rim faced. The total time required for both settings with the revised method of tooling was 36 min. and averaged about 40 min. on a run of 100 pieces, including the setting up of the machine. The piecework price was accordingly changed to 30 cents each in place of 90 cents as formerly. The operator was very much dissatisfied with this rate and threatened to "get through." It was not the policy of the company to antagonize the men or to cut their wages, but it was very desirous of reducing the cost of the machining, which had heretofore been excessive. The operator was therefore asked if he knew of any other company willing to pay 45 cents an hour for that kind of work, and he was shown that this was really what he had received for the time spent on the job. He did not say that he knew of any other company paying the amount mentioned, and he finally reconsidered his determination to leave.

As a matter of fact the whole proposition was a very good lesson for him and he afterward became an exceptionally good operator. On the very next job which came along he was seen with a pencil and paper, sketching out a method of handling before making any attempt to set up his machine. He then went to the "crib" and found the tools he needed so that he was able to tool-up the work to very good advantage. The piecework price had been cut to about what it should have been in the

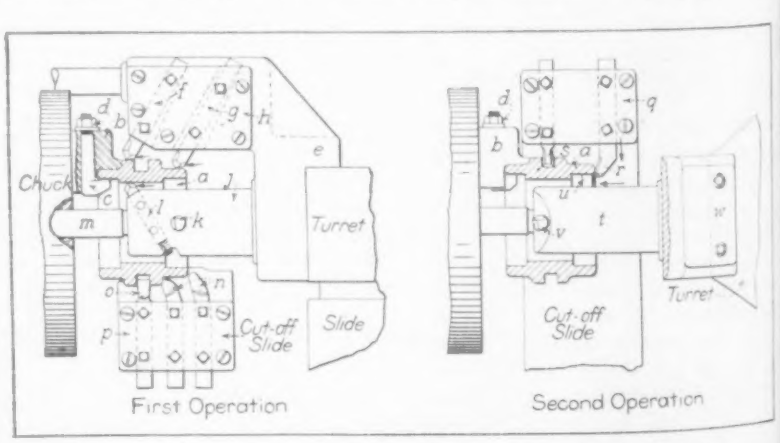


Fig. 3—Arrangement of Tools to Produce a Friction Clutch Band

first place, yet he succeeded by using a little headwork in advance, in averaging about the same as his previous rate. In addition to this his attitude set up a spirit of emulation among the other men which was of great advantage in preventing dissatisfaction. The gain in the cost of production practically equalized the cost of the special tools after two lots had been machined, and in addition to this it will be seen that the work came along through the factory much more rapidly, so that there was a considerable saving here also.

Considerable difficulty had been experienced in the handling of the friction clutch collars shown in Fig. 2. More or less distortion of the work had been found in nearly all cases when an attempt was made to increase the rate of production, for a reference to the illustration will show that the work could not easily be held by ordinary methods unless very light cuts were taken. Therefore whenever the operator attempted to take heavier feeds he was obliged to tighten up his chuck jaws with the obvious result of distorting the piece.

Fig. 3 shows in the left half of the illustration a method of holding which is at the same time rigid and yet which does not distort the work if carefully used. The work *a* is centered by the special jaws *b*, which are brought up lightly against the outer surface. The pressure applied should be no more than is necessary to ensure contact of the three jaws. After this has been done, the hook-bolts *c* may be tightly drawn up against the inner surface by the nuts *d*. It will be noted that with this method of holding, a metal-to-metal grip is obtained which is very powerful and which also tends to eliminate vibration in the work. Jaws of this type are very useful in the machining of thin work and will be found a good investment if made up for use in the chucking department.

A very good example of the value of special tooling is shown in this illustration. The type of turret lathe used in this instance has a turret with longitudinal feeds only, but it also has a cut-off slide with provision for the mounting of tools at both front and rear of the slide. A special adjustable turning tool, *e*, is mounted on the turret face and it is provided with a removable tool block, *h*, in which the two turning tools *f* and *g* are placed. The tool blocks are readily changed so that many conditions can be covered by the use of suitable blocks. The tools in each block are also capable of handling a considerable variation in sizes, so that the tool itself may be considered as one useful for many purposes. Additional rigidity is given by the pilot at the forward end which enters a bracket on the spindle cap. The boring bar *j* contains two tools *l* and *k* for boring and facing the interior surfaces. A special tool block, *r*, on the front of the cut-off slide carries the facing and grooving tools *n* and *o*. It will be seen that there are seven tools working simultaneously in this operation, thereby greatly assisting in the production. In the illustration the cut-off slide is shown in a false position 90 deg. from its actual location, to make the multi-cutting effect clearly apparent.

The turret tooling for the second operation is identical with the first and is shown in the right portion of the illustration. The casting *w* is broken away for the sake of clearness. The bar *t* contains the tools for finish boring and facing *u* and *v*, which are at work in connection with the outside turning tools that are not shown. A special tool block, *q*, at the rear of the slide is supplied with the tools *r* and *s* for finish facing and grooving. Other operations in this setting are comparatively unimportant and need not be illustrated here.

An expanding arbor was used for holding the work during the second setting and the tooling was extremely simple, the outside turning being accomplished by the same tools used in the first setting. The boring was done by short boring bars and the facing by front and rear tools in the cut-off slide, and the machining time for both settings was reduced to 26 min. in lots of 100 pieces, including the setting up of the machine. The piecework price was reduced to 20 cents each.

It may be readily seen that the improvement in production was sufficient to pay amply for the cost of special tooling in each of the cases cited. There were a few other instances in the work of this particular department, when simple special tools were made up to improve the production, but in no case were these tools built unless the saving seemed sufficient to pay for their cost within a short time. In a general way the greatest saving came from the overhauling of the department and the improvement of the working methods, together with the constant hints given to the men to study out their methods of tooling so as to get all there was in their machines. The net result of the time and care spent in this department was an increased efficiency of over 40 per cent. on the average production.

C. R. Hubbard's Business Career

The News of Wheeling, W. Va., publishes in its issue of July 26 an interesting sketch of C. R. Hubbard, who has just retired from the presidency of the Wheeling Steel & Iron Company. Mr. Hubbard has a record of 40 years of continuous and successful application to one business and one occupation. His connection with the iron trade began in 1874, when he took a position with the Wheeling Iron & Nail Company, of which his father, Chester D. Hubbard, was president. In 1892, when the Wheeling Steel & Iron Company was formed by the combination of the Wheeling Iron & Nail Company, the Belmont Nail Company and the Benwood Iron Works, he was elected president and general manager of the new organization. Under his direction the plants of the company were modernized, the manufacture of cut nails was abandoned and the manufacture of tubes and other steel products substituted. The capital of the company has been increased from about $1,600,000 to practically $5,000,000, and every dollar of this increase has been earned under Mr. Hubbard's direction, while in addition thereto cash dividends have ranged from 6 to 10 per cent. during the entire period. Under his administration no serious strikes or labor difficulties occurred in any of the plants of the company.

Ryerson & Son's St. Louis Plant

The purchase of the W. G. Hagar Iron Company, St. Louis, Mo., by Joseph T. Ryerson & Son, Chicago, was announced in *The Iron Age* of July 23. The warehouse thus acquired becomes the Hagar plant of the Ryerson organization. It covers almost an entire city block, from Main to Second streets on Clinton and Monroe streets. The business has been built up through 20 years' service and its managers thus acquired a wide reputation in St. Louis and the Southwest as a comprehensive source of mill, mine and boiler makers' supplies. The new owners will enlarge the plant by the addition of a perfectly equipped structural steel warehouse and will carry heavy stocks of soft steel and iron bars, plates, concrete reinforcing material, sheets and metal-working machinery. A. M. Mueller, for some years assistant manager of sales in Chicago, will be in charge of the Hagar plant as resident manager.

Joseph T. Ryerson & Son now have warehouses in four strategically located cities and have eleven branch offices. They not only offer steel users a nation-wide service, but present to them facilities for meeting practically every requirement in manufactured iron and steel.

ESTABLISHED 1855

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A Time for Co-operation

The business world has been swept into one unprecedented situation after another in this momentous week. With all the great exchanges of the world closed on Friday the gravity of the European situation was unmistakable, and by Saturday three leading powers were at war. France was drawn into the vortex on Monday and as this is written England is hurrying her army and navy into a struggle whose ultimate or proximate consequences no man can begin to measure.

The average business man remote from the metropolis may have thought of the closing of the New York Stock Exchange for the first time in 41 years as a wise precaution for those directly concerned, but as not remotely related to him. Now he sees that that action was but one sign of an unparalled world crisis in finance and of a war blockade on trade, whose consequences will penetrate every corner of the land. But prompt action by federal treasury officers and the bankers of New York has shaped matters so that the drain of our gold is in the way of being controlled, and with surprising quickness measures have been set in motion to prevent serious constriction of credit. The past months of conservatism, with business under the harrow, now promise to yield fruit not counted on, in the meeting of the problems of this amazing situation without panic or serious loss.

As showing how much at sea business has been in the past week, we have had opposite answers to the all-important question, what effect the war will have upon our grain exports. It has been said that it will close Europe against them and that our farmers, in the midst of such plenty as they have never known, will not be able to turn their exportable surplus into money. But opposed is the quite reasonable view that the one thing Europe's warring millions must have is food, and that at any hazard the way will be kept open to get it.

Already the effects of the suspension of exports in certain lines are seen, as in the oil trade, and in various manufactured products. Elsewhere these are referred to, as they have appeared in the steel and machinery trades. But overtopping all such disturbances are the ability of the 100,000,000 people of the United States to do business at home and their evident purpose to go about their business and not lose their heads. There is no occasion for anything like the measures which Europe has had to enforce as a protection against chaos. Ordinary business obligations should be met as they mature. No parallel exists for the conditions of 1907 with their premium on currency and the breaking down of the machinery of credit.

We cannot doubt that the war will bring a spirit of co-operation at home that has long been sadly lacking. The promptness with which men of all parties united at Washington Monday in taking the first steps in aid of exports in vessels flying the American flag is good promise for the sinking of partisanship in other emergencies that must be met. American business has been under fire for many months. As European war begins it is time to end the war at home and to work for a new spirit of loyalty to the common interest.

Our Crippled Sea Service

The sea at last demands attention. The subject of our merchant marine has suddenly assumed supreme importance. For fifty years our law makers have dallied with the question as to how to restore our over-sea shipping to the proud position it occupied before the civil war. They have discussed, without action, and have permitted year after year to slip away with our ships in foreign trade becoming fewer and those of other nations growing more and more numerous. All kinds of schemes have been considered by Congress and all sorts of methods of stimulating the interest of capitalists in over-sea shipping have been broached, but nothing definite has taken shape. From time to time a strong movement in favor of a ship subsidy has developed, but the opposition has invariably been too strong for the adoption of such a policy, no matter what guise it might assume.

It has perhaps been unfortunate that the opponents of practical assistance to American shipping interests have always had available for their use the argument that it was not necessary for us to tax ourselves to build ships while other nations have stood ready to furnish us with all the ocean transportation necessary. They have further been assisted by the fact that the position of the United States renders it almost impossible that this country should become involved in war with any great foreign power and thus make it difficult for us to either transport our products to or receive shipments from foreign countries. The specious plea has always been advanced that any national assistance extended to shipping interests would benefit

a comparatively small number of capitalists and that the building up of American shipping was more an academic question than one of practical importance.

The developments of the past week, however, have abruptly brought us to a realization of our helpless condition with respect to handling foreign trade. The breaking out of hostilities between some of the most important European nations and the fear of others being involved have completely disorganized the transatlantic trade and the greatest difficulty is now being experienced in securing transportation for our products to or in receiving shipments of needed materials from Europe. The breakdown of the shipping facilities of the world is one of the most unexpected developments of modern progress and civilization. We now realize how years of valuable time have been permitted to slip away without some effective measures having been devised for the upbuilding of our merchant marine.

It is now necessary that we take vigorous and most aggressive action for the restoration of American shipping on the high seas. Such expedients as are being proposed in Congress are well enough in their way and may be of some value in enabling our merchants and manufacturers to secure at least a part of needed transportation facilities, but they are not sufficiently far-reaching for our future needs. We may admit foreign vessels to American registry but not enough ocean tonnage will be available in this way to meet our requirements. It is highly essential that much more than this should be done. It is possible that the rude awakening which we are now having from our dreams of the past fifty years may cause the leaders of all parties in Congress to unite on some measure, whether it be shipping subsidies or other stimulating methods, that will from this time steadily build up a merchant marine commensurate with the commercial importance of this country. If the European war should last for many months and our merchants, manufacturers and agriculturists should fail to reap the benefit of vast European markets for our products, a lesson will be administered to our petty politicians that will be borne in mind at least throughout the present generation. It is to be hoped that one of the important results of this much dreaded European conflict may be the restoration and upbuilding of our merchant marine.

Some Aspects of "Trust" Legislation

The distinguished Secretary of State, when he was merely a candidate for the Presidency, proposed the doctrine that the test of "when is a trust a trust" should be when it controlled more than a certain proportion, say 50 per cent., of the business in which it was engaged. When a "trust" was found it should be required to dissolve itself by the amount in excess of the 50 per cent. It is somewhat refreshing to reflect that there is progress, even at Washington, and that the doctrine of the Presidential candidate of six years ago is not a part of the programme of the administration in which he holds an important portfolio.

Considering the strong sentiment that has existed for years in business circles in favor of "taking the tariff out of politics" by the establishment of a non-partisan tariff commission, the present effort to establish a trade commission to deal largely with the "trusts" may be regarded as strictly in the line of progress. The trust question is a relatively new one with us, in the sense that it has passed through only two Presidential campaigns and was not a major issue in either of them. Party lines have not been drawn strictly upon it, an illustration of which fact is that the present administration is frequently referred to as a minority interest, despite the fact that the third party at the election advocated a trade commission with much wider powers than that now contemplated at Washington. In the circumstances it is easy to conceive of the trust question becoming the main subject of division in party politics, with biennial or quadrennial quarrels of the most damaging nature. When a non-partisan tariff commission has been held forth as the one way to remove the tariff from politics certainly a non-partisan trade commission should exert a similar influence with respect to the trust question. The Interstate Commerce Commission has been singularly free from charges of party influence, and there is reason to infer that through the course of time the proposed trade commission would prove itself similarly non-partisan.

Very little of serious objection, indeed, has been raised to the proposition to establish a trade commission, except upon the one and important ground that the inquisitorial powers sought to be granted it, with respect to the securing of detailed information as to the business of individual companies, would furnish room for much injustice to the companies thus scrutinized. The practical working of such a commission, however, may easily fail to confirm these fears. Business has been making rapid progress in many directions, but in none so markedly as in the interchange of information. There are fewer secrets than there were. In the steel industry, for instance, costs are no secret. All the large steel interests know each others' costs quite closely. It is a vital necessity with them in reducing their own costs, as they are constantly striving to do, to know what the cost is to their competitors. Every manufacturer is more anxious to know another's cost than he is to conceal his own. In other respects, as to the personnel of a given concern's customers, for instance, there is relatively little to conceal. A dozen years ago "The Inside History of the Carnegie Steel Company" was read with eager interest by thousands, but in the recent hearings in the Steel Corporation suit the newspaper reports were hard put to find points of "human interest" in order to make their reports readable. Thus a trade commission may prove less menacing in publicity than has been feared.

A really striking feature of the pending trust legislation is its close reference to business practices and its almost complete lack of reference to the size of business interests it seeks to control. Some of the early decisions under the Sherman law took a diametrically opposite view, that the holding of the power, not the exercise of it, constituted the question to be decided. The greatest case brought under the Sherman law, that against the United States Steel Corporation, has developed largely into the claim, on the one hand, that there were the ability and the intention to restrain trade, and the

claim, on the other hand, that the practice was to further trade. While there are restrictions upon the discussion of a pending court case, it is certainly admissible to point out that while the steel suit was brought under the Sherman law, the pending legislation is avowedly aimed to reinforce and supplement that law, so that if it is law at the time the steel case is decided it can hardly be ignored. In the peculiar circumstances we cannot see any possibility of its being kept out of the case on the ground of being *ex post facto* legislation. In this and other respects the great steel suit, so much feared in 1911 as a possibility, is becoming less and less an element of consequence in the business situation.

Machine Building on Work Time Contracts

Users of metal-working machinery have profited in some recent cases by placing contracts for special machines on the basis of so much per working hour required in construction in the works of the builder. The success of this method was shown in the case of a large boiler maker who had need of a riveter of large proportions and of special dimensions. He knew what he wanted as a type, because he was satisfied with a smaller size of the same machine which he had in operation. After consultation with the builder, it was agreed that the riveter be built, not for a lump sum but at so much per hour, which would include labor and overhead, plus the cost of material at current market prices. The result was a large saving to the purchaser. The exact amount is impossible to figure closely, partly because the builder had made no estimate of what he would charge under usual practice, and partly because by chance two other boiler makers, learning of the proposed machine, each decided to accept the opportunity to acquire one, so that the builder put three of them through his works instead of one. This naturally made a considerable saving. Probably each buyer saved the difference between $10,000 and about $6500 and even had only one machine been built the saving would have been more than $2000.

In transactions of similar character with reliable houses the advantage has been with the buyer in a large percentage of cases, it is claimed. To be sure there is a factor of risk. The cost might prove to be higher than it would have been had the machine been delivered for a given sum. But usually the manufacturer who estimates on a special tool makes the price high enough to cover any contingency. Where the purpose of the tool is so highly special that the design throughout must vary greatly from any previous model, the factor of safety is figured very high. One manufacturer, at least, makes it a practice in such cases to get as close as possible to what the actual cost will be and "doubles the figures and then doubles it again." If the original estimate is correct, his percentage of profit is enormous, and from that it shades down, until in the case of the failure of the initial plan, and the necessity of making important changes, he may have to be content with no profit.

But it is absolutely necessary that the builder maintain an accurate system of keeping track of the work. Manufacturers who do business with customers on this basis sometimes complain that their figures are criticized. The cost system should be so easily understood that in case of a disputed claim the facts could be readily determined by an inspection of the record.

Many manufacturers of standard machinery favor the work time system. One machine tool builder insists upon this form of contract whenever any variations from the regular type are required. The charge in his bill comprises the actual labor and material cost together with overhead and the addition for profit.

CORRESPONDENCE

New York Workmen's Compensation Act and Married Employees

To the Editor: During the last few days the newspapers have published a number of articles upon the question of employers discriminating between married and single men, and also of forcing their men to submit to a physical examination. Leaving out of the question whether this is a wise course to pursue, we do not believe the Workmen's Compensation Commission has any power to interfere nor can it refuse to let an employer carry his insurance himself or in an insurance company, as the law gives him that right.

In the New York Times of July 25, the State Compensation Commission was reported as issuing a warning to the employers of the State who should pursue this policy. The reasoning in this article as to why such a course was unnecessary is very carefully prepared, but it fails entirely to state the underlying principles which will tend to such action on the part of employers.

It is true, as the commission states, that the rate of compensation is based upon the weekly wages paid the men, whether married or single, and the premium rate is calculated solely upon the hazard of the industry, so that the rate in any particular industry for the first year will not vary, whether the men employed therein are married or single, or whether they are a desirable risk. However, when the first year has passed and the insurance carrier, whether a private insurance company or the State fund, finds that the loss in a certain industry has exceeded the premium charged, it must necessarily follow that in order to continue the insurance business on a safe margin, an increase must be made in the rate on that industry.

The rates of insurance are established for various lines of industry, and if one of them is unfortunate, whether through carelessness or otherwise, and sustains heavy losses due to injuries or death, the rate must be increased; and everything else being equal, the industry that employs married men with large families or men with physical defects will certainly have the greater loss and hence must pay a larger insurance premium. Any one who has made a careful study of industrial accidents knows that they are more apt to occur during the time of day when a man's mental faculties have become fatigued, and further that a man who is physically weak is more apt to be injured than one whose condition is absolutely normal. This being true, it must necessarily follow that employers who can secure physically sound men will in all probability have fewer accidents.

While we do not believe that the average employer is going to do anything that will work an unnecessary hardship upon his old employees, it cannot be denied that there is an incentive to keep the risks under the compensation law as low as possible and that this will have its effect however fair the employer may intend to be.

The statement of the commission to the effect that employees who are below the average of physical standard can be insured as well as all others is true, and yet

it leaves a wrong impression. It may not affect the cost the first year, but in order to have the workmen's compensation plan become permanent, it is necessary for the insurer, whether State or private company, to charge enough to keep their funds from becoming exhausted. This shows the fallacy of the remark said to have been made by a member of the commission, that an employer who insures in the State fund will lose all incentive to discriminate between the men he employs. Eventually the employer must pay the premium, and the greater the number of his accidents the more he must pay. The same principles govern, whether the employer is insured in the State fund, by casualty companies (either stock or mutual) or whether he carries his own insurance. It is eventually to his interest to keep his accidents down, unless he wants to pay excessive compensations.

This whole question of workmen's compensation is new and untried in this country, and hence it is not to be expected that any one can grasp it fully; but we believe that at this time when everyone is seeking information, statements intended to influence the minds of the people should cover all of a subject and not stop short with only one-half of it, and thereby leave an erroneous impression in the minds of readers.

It is perhaps not to be expected that the commission would call attention to the fact that it can only cover for "workmen's compensation," and then only in such industries as are affected by the law, but that is a fact. Furthermore, in hundreds of cases it is a question whether a particular employee comes under the law or not. The casualty companies not only carry the compensation risk, but also the liability under the employers' liability act, in case the employee does not come under the compensation law.

It is very important that the industries of the State should be able to secure this insurance covering both their liability and compensation, and any thought of forbidding the casualty companies writing insurance in the State should not be seriously considered by any one.

In our judgment the foregoing states the situation as it actually exists, and we trust it will help to a better understanding of the compensation law and its tendencies.

NEW YORK STATE MANUFACTURERS' ASSOCIATION,
C. A. CHASE, President.

SYRACUSE, N. Y., July 30, 1914.

Repairing Malleable Castings

To the Editor: An article in *The Iron Age* of July 16, under the heading, "Welding Malleable Castings," is very interesting and instructive, especially from the viewpoint of those who wish merely to repair broken malleable castings which have already been in service. The method used by the Vulcan Process Company gives the best results possible for general repair work. It is a makeshift, however, and is not satisfactory in the malleable foundry for two principal reasons.

The completed joint made with bronze is not so strong as the original casting.

The joint shows clearly a different color from the casting.

As is the case with various steel and iron foundries, the malleable foundries have always sought some suitable method of reclaiming defective castings. This fact has led the Superior Oxygen Company, Pittsburgh, into exhaustive investigation of the subject of satisfactorily reclaiming malleable castings in the malleable foundry just as satisfactorily as iron and steel castings have been reclaimed in the foundry for years. As stated in the article referred to, the fusion of a finished malleable casting reduces the malleable iron to a white-iron casting, leaving it very hard, like glass, with no malleability whatever. Therefore, merely to weld the casting, using a malleable-iron filling rod, as in the case of welding a gray-iron casting with a gray-iron filling rod, is not satisfactory, due to the dispersion of carbon and the resultant weak spot where welded.

Due to the research of experts in the employ of the Superior Oxygen Company, oxy-acetylene welding plants have been installed in malleable-iron foundries for the successful reclaiming of defective malleable castings. After the casting has been annealed and taken from the furnace and the shrinkage crack or other defect discovered, the crack or hole is champered out as usual and the blowpipe flame applied until the casting comes to a fusion at the point to be welded when a malleable-iron filling rod of approved content must be fused into the defect with the aid of a flux especially used for this purpose until the defect is entirely closed and a smooth homogeneous weld is the result. At this stage of the operation, the weld is very hard and brittle, but is rendered as soft and malleable as any other part of the casting by putting the casting again through the entire annealing process as it had gone through before the defect was discovered.

By manipulation of the blowpipe flame the surface of the weld can be made as smooth as any other part of the casting. After following this procedure, inspection of the completed work will reveal that the entire casting including the weld has regained its malleability and is in just as good shape as if the casting had never been defective. Of course, these remarks do not apply in general repair and machine shops where annealing facilities are not accessible.

In some cases, according to the design of the casting or the location of the defect the casting should preferably be preheated before welding to avoid undue expansion and contraction caused by the heat of the local application of the blowpipe flame. In this work, as in the welding of all castings of any material, the ordinary rules of foundry practice must be observed.

GEO. M. BAILEY.

CLEVELAND, OHIO, July 21, 1914.

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A SLIGHT FURTHER DECLINE

Six More Furnaces Blown Out in July

Capacity in Blast on August 1 Over 200 Tons More Than on July 1

The July statistics of the production of coke and anthracite pig iron indicate a still greater slackening in the rate of decline. In May the falling off in the daily rate of production was 8159 tons and for the month just ended it is only 766 tons. The decline in the daily rate was 3590 tons in June. The total production for the month was 1,957,645 tons, or 63,150 tons per day, against 1,917,783 tons, or 63,916 tons per day in June. There was a net loss of 6 active furnaces, there having been 188 stacks in blast on August 1 and 194 on July 1. The furnaces in blast on August 1 had a capacity of 63,935 tons per day as compared with 63,698 tons a month previous, an increase of 237 tons. The decline in the daily rate of production was more marked in the merchant furnaces and was sufficient to more than balance a gain of over 700 tons per day on the part of the steel works furnaces.

DAILY RATE OF PRODUCTION

The daily rate of production of coke and anthracite pig iron by months, from July, 1913, is as follows:

Daily Rate of Pig-Iron Production by Months—Gross Tons

	Steel works	Merchant	Total
July, 1913	59,362	23,239	82,601
August	59,140	22,981	82,121
September	60,941	22,590	83,531
October	59,630	22,503	82,153
November	52,434	22,019	74,453
December	41,879	22,108	63,987
January, 1914	40,691	20,117	60,808
February	47,479	19,974	67,453
March	54,990	20,748	75,738
April	54,508	21,157	75,665
May	47,028	20,478	67,506
June	44,321	19,595	63,916
July	45,027	18,123	63,150

OUTPUT BY DISTRICTS

The accompanying table gives the production of all coke and anthracite furnaces in July and the three months preceding:

Monthly Pig-Iron Production—Gross Tons

	Apr. (30 days)	May (31 days)	June (30 days)	July (31 days)
New York	144,200	137,853	124,374	118,471
New Jersey	10,868	10,880	10,327	10,825
Lehigh Valley	75,072	65,500	63,640	60,714
Schuylkill Valley	68,436	69,770	64,392	67,056
Lower Susquehanna and Lebanon Valley	41,493	41,124	30,377	21,250
Pittsburgh district	529,371	461,660	424,590	455,873
Shenango Valley	125,756	90,414	67,915	67,291
Western Pennsylvania	113,979	121,145	115,470	125,264
Maryland, Virginia and Kentucky	61,694	64,223	59,218	51,150
Wheeling district	113,467	86,138	74,982	72,318
Mahoning Valley	241,254	222,207	207,693	216,134
Central and Northern Ohio	167,920	151,501	136,021	140,181
Hanging Rock and S. W. Ohio	34,058	35,361	31,746	19,944
Chicago district	305,718	301,696	286,644	289,369
Mich., Minn., Mo., Wis. and Col.	75,680	66,242	59,438	61,423
Alabama	142,985	151,203	144,521	151,612
Tennessee	18,004	15,769	16,435	18,671
Total	2,269,955	2,092,686	1,917,783	1,957,645

PRODUCTION OF STEEL COMPANIES

Returns from all furnaces of the United States Steel Corporation and the various independent steel companies show the following totals of product month by month. Only steel-making iron is included in these figures, together with ferromanganese, spiegeleisen and ferrosilicon. These last, while stated separately, are also included in the columns of "total production."

Production of Steel Companies—Gross Tons

	Pig, total production			Spiegeleisen, ferromanganese, etc.		
	1912	1913	1914	1912	1913	1914
Jan.	1,483,153	1,981,560	1,261,430	22,622	15,633	17,325
Feb.	1,550,995	1,792,154	1,329,414	15,950	20,131	10,524
Mar.	1,827,792	1,904,878	1,704,688	11,538	20,546	20,133
Apr.	1,830,717	1,939,751	1,635,226	11,104	23,108	18,676
May	1,922,557	1,991,192	1,457,847	20,518	19,042	21,504
June	1,823,958	1,860,070	1,329,623	26,685	19,212	16,254
July	1,803,205	1,840,216	1,395,851	26,522	22,310	16,524
Aug.	1,843,404	1,833,352	.....	24,225	20,680	.....
Sept.	1,773,073	1,828,232	.....	22,484	24,555	.....
Oct.	1,947,426	1,848,634	.....	27,252	19,499	.....
Nov.	1,884,524	1,573,007	.....	17,461	26,765	.....
Dec.	1,976,870	1,298,262	.....	18,523	14,095	.....

CAPACITY IN BLAST AUGUST 1 AND JULY 1

The following table shows the daily capacity, in gross tons, of furnaces in blast August 1 and July 1, by districts:

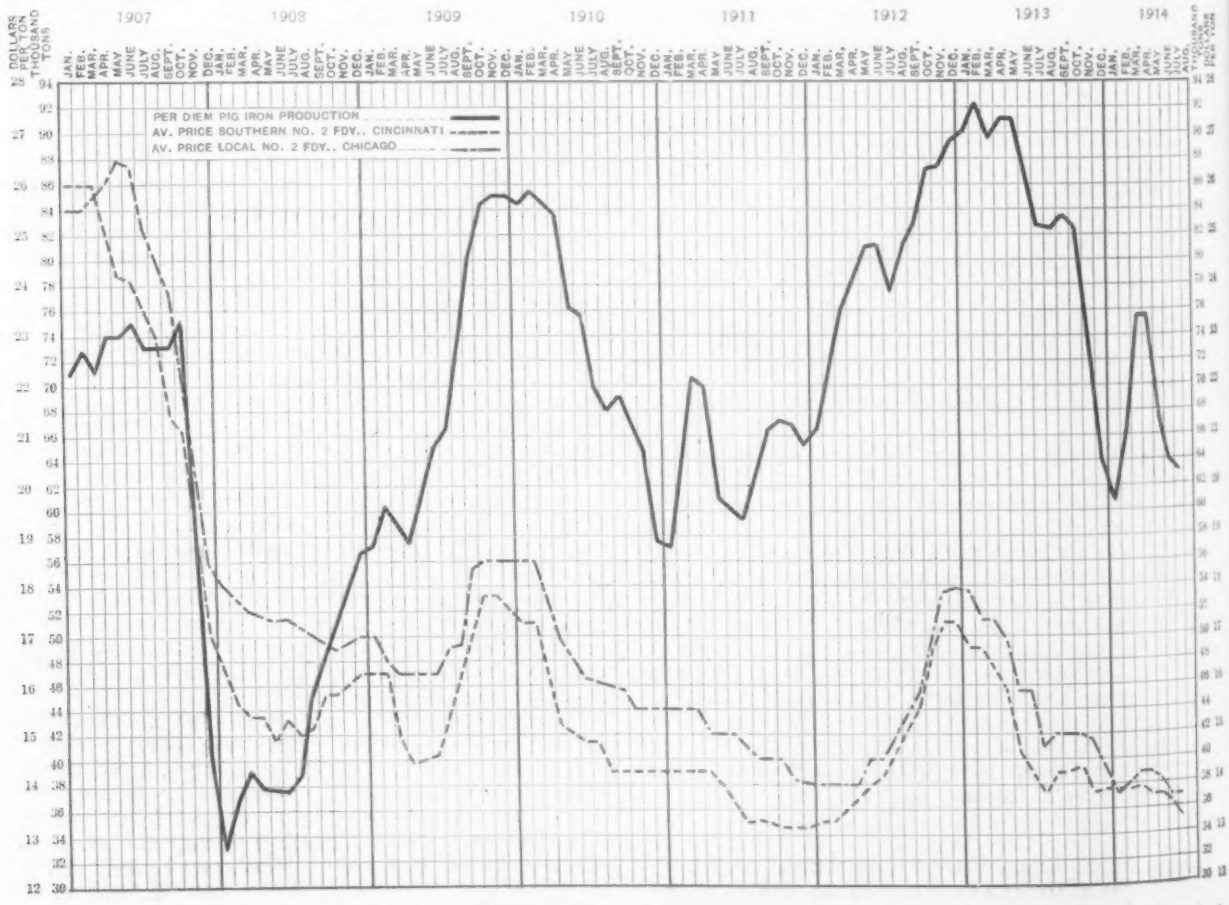

Diagram of Daily Average Production by Months of Coke and Anthracite Pig Iron in the United States from January 1, 1907, to August 1, 1914; Also of Monthly Average Prices of Southern No. 2 Foundry Iron at Cincinnati and Local No. 2 Foundry Iron at Chicago District Furnace

Coke and Anthracite Furnaces in Blast

Location of furnaces	Total number of stacks	Aug. 1 Number in blast	Aug. 1 Capacity per day	July 1 Number in blast	July 1 Capacity per day
New York:					
Buffalo	12	10	3,174	10	3,581
Other New York	7	3	620	3	565
New Jersey	7	2	349	2	344
Pennsylvania:					
Lehigh Valley	22	6	1,793	7	1,986
Spiegel	2	1	84	1	78
Schuylkill Val.	16	7	2,107	8	2,198
Lower Susquehanna	7	2	495	2	479
Lebanon Valley	10	3	511	3	533
Pittsburgh Dist.	52	33	14,762	31	13,824
Spiegel	4	2	418	2	329
Shenango Val.	19	7	2,171	7	2,180
Western Pa.	27	13	4,013	13	3,882
Maryland	4	2	815	2	882
Wheeling Dist.	14	6	2,203	7	2,499
Ohio:					
Mahoning Val.	25	18	7,455	17	6,967
Central and Northern	24	11	4,457	13	4,534
Hanging Rock & S. W. Ohio	15	4	563	7	1,012
Illinois and Ind.	34	20	9,334	20	9,515
Spiegel	2	0	0	0	0
Michigan, Wis. & Minn.	10	5	1,271	5	1,242
Colorado and Mo.	8	2	771	2	740
The South:					
Virginia	24	6	742	7	833
Kentucky	5	1	130	1	130
Alabama	46	20	5,175	19	4,817
Tennessee	20	4	522	5	548
Total	423	188	63,935	194	63,698

Fifteen furnaces were blown out and nine were blown in last month. Among the former were one Lackawanna at Buffalo, one Hokendauqua in the Lehigh Valley, Temple in the Schuylkill Valley, Perry in Western Pennsylvania, Princess in Virginia, Martin's Ferry in the Wheeling district, No. 1 River in Northern Ohio, Cherry Valley in the Mahoning Valley, Lawrence, Hamilton and one Wellston in the Hanging Rock district, Thomas in Wisconsin, one Clifton in Alabama, and Cumberland and Rockdale in Tennessee.

Among furnaces blown in in July were one Wickwire at Buffalo, one Cambria in western Pennsylvania, one Carrie, one Duquesne and one Isabella in the Pittsburgh district, Haselton No. 4 and one Ohio in the Mahoning Valley, Alabama City and Ensley No. 6 in Alabama.

DIAGRAM OF PIG-IRON PRODUCTION AND PRICES

The fluctuations in pig-iron production from January, 1907, to the present time are shown in the accompanying chart. The figures represented by the heavy lines are those of daily average production, by months, of coke and anthracite iron. The two other curves on the chart represent monthly average prices of Southern No. 2 foundry pig iron at Cincinnati and of local No. 2 foundry iron at furnace at Chicago. They are based on the weekly market quotations of *The Iron Age*. The figures for daily average production are as follows:

Daily Average Production of Coke and Anthracite Pig Iron in the United States by Months Since January 1, 1907—Gross Tons

	1907	1908	1909	1910	1911	1912	1913	1914
Jan.	71,149	33,918	57,975	84,148	56,752	66,384	90,172	60,808
Feb.	73,038	37,163	60,976	85,616	64,090	72,442	92,369	67,453
Mar.	71,821	39,619	59,232	84,459	70,036	77,591	89,147	75,738
Apr.	73,885	38,289	57,962	82,792	68,836	79,181	91,759	75,665
May	74,048	37,603	60,753	77,102	61,079	81,051	91,039	67,506
June	74,486	36,444	64,656	75,516	59,585	81,358	87,619	63,916
July	72,763	39,287	67,793	69,305	57,841	77,738	82,601	63,150
Aug.	72,594	42,851	72,546	67,963	62,150	81,046	82,057	.....
Sept.	72,783	47,300	79,507	68,476	65,903	82,128	83,531	.....
Oct.	75,386	50,554	83,856	67,520	67,811	86,722	82,133	.....
Nov.	60,937	51,595	84,917	63,659	66,648	87,697	74,453	.....
Dec.	59,815	56,158	85,022	57,349	65,912	89,766	63,987	.....

THE RECORD OF PRODUCTION

Production of Coke and Anthracite Pig Iron in the United States by Months Since January 1, 1910—Gross Tons

	1910	1911	1912	1913	1914
Jan.	2,608,605	1,759,326	2,057,911	2,795,331	1,885,054
Feb.	2,397,254	1,794,509	2,100,815	2,586,337	1,888,670
Mar.	2,617,949	2,171,111	2,405,318	2,763,563	2,347,867
Apr.	2,483,763	2,064,086	2,375,436	2,752,761	2,269,955
May	2,390,180	1,893,456	2,512,582	2,822,217	2,092,686
June	2,265,478	1,787,566	2,440,745	2,628,565	1,917,783
July	2,148,442	1,793,068	2,410,889	2,560,646	1,957,645
Aug.	2,106,847	1,926,637	2,512,431	2,545,763	.....
Sept.	2,056,275	1,997,102	2,463,839	2,505,927	.....
Oct.	2,093,121	2,102,147	2,689,933	2,546,261	.....
Nov.	1,909,730	1,999,433	2,630,854	2,233,123	.....
Dec.	1,777,817	2,043,270	2,782,737	1,983,607	.....

Swift & Co., Union Stock Yards, Chicago, make emphatic denial of the report that they are about to build a fertilizer and oil-mill plant at Augusta, Ga.

Blast Furnace Notes

In all probability there will be but one furnace, Nellie, operating in the Ironton district in the latter part of the month. Union is expected to blow out on August 15.

Sarah furnace is expected to go in blast September 1.

In the Buffalo district the changes in the active stacks leave the same number in blast on August 1 as on July 1. Harriet Y, of the Wickwire Steel Company, was blown in on July 30. No. 4 stack of the Susquehanna furnace was blown out on July 14, its place being taken by the No. 3 stack which was blown in four days before. The No. 6 stack of the Lackawanna Steel Company was blown out on July 18.

Port Henry, N. Y., furnace was blown out on August 3 for relining.

The No. 1 Hokendauqua furnace of the Thomas Iron Company was blown out on July 31 and this group is now entirely idle.

Temple furnace in the Schuylkill Valley was blown out on July 14 for relining.

No. 2 Isabella furnace of the Carnegie Steel Company was blown in on July 23. Other changes in the Pittsburgh district in the month include the blowing in of one Carrie and one Duquesne furnace by the same company.

The Cambria Steel Company had all but one of its furnaces at Johnstown in blast on August 1, No. 2 having blown in on July 10 after being rebuilt. No. 3 was out of blast for the entire month.

Colonial furnace was banked seven days in July for repairs.

No. 2 Ashland furnace was banked for repairs from July 2 to 12.

No. 2 Haselton furnace of the Republic Iron & Steel Company was blown in on July 24.

German Exports for June and the Half Year

German steel and iron exports for June were unexpectedly heavy. With 620,542 metric tons, they were the second highest ever recorded in June, and were but 16,000 tons behind the record figures of April, 1914. The figures, however, do not denote any change of the market for the better, although they might appear to indicate a remarkable development in the last three months.

Export figures for the first six months of the year show an increase of tonnage, but a predominance of the cheaper semi-finished products and a falling off of the B products, with a consequent decrease of the value of exportations. The tonnage rose from 3,269,230 metric tons in the first half of 1913 to 3,352,044 tons this year, but the value dropped from 674,519,000 marks to 659,950,000 marks. The pig-iron exports, which reached the high point in 1913 of 444,123 tons, dropped to 340,000 tons. Semi-finished products show an increase from 331,210 to 363,909 tons. The exports of rails and other railroad material also show increases, the first from 254,757 to 287,061 tons, the latter from 65,807 to 98,294 tons. The exports of beams, however, showed the big decrease of 64,700 tons. Bars recorded the greatest increase of any of the B products, rising from 540,750 to 646,232 tons. Heavy plates gained 25,000 tons, thin plates (under No. 6 gauge) 4600 tons, and wire 14,000 tons. The exports of rolled tubes fell off from 144,175 tons in 1913 to 133,211 tons.

President Wilson signed the sundry civil appropriation bill for 1915 on August 1. He was eloquently silent, however, on the fact that it again contained the provision that no part of this money shall be spent in the prosecution of labor and agricultural organizations under the Sherman law. In March, 1913, President Taft vetoed the sundry civil appropriation bill because it contained this provision. He said of it, "this provision is class legislation of the most vicious sort." Efforts to secure comment from President Wilson on the exemption this year failed, despite the vigorous campaign against it by the Chamber of Commerce of the United States.

The Iron and Metal Markets

PRICES WITHDRAWN

Steel Companies Make Advances in Face of War

Ferromanganese Situation May Be Pivotal—England's Action Helps Exports—Steel Corporation Vessels.

The United States Steel Corporation withdrew prices on all its products Tuesday night and its subsidiaries are now only quoting on business as it arises, the new quotations representing in some cases a further advance of $1 a ton.

This action indicates the purpose of the Steel Corporation, which appears to be shared by several important independent companies, to make no further commitments at the low prices lately prevailing, in view of the great changes market conditions may undergo before the end of the European war.

Some intimations of pending advances were abroad in the trade on Tuesday and for that day the Steel Corporation's bookings amounted to 53,000 tons.

Our Pittsburgh advices of August 5 are as follows: "The Pittsburgh market on finished iron and steel, notably plates, shapes, bars, sheets and tin plate is stronger in price than at any time since early in the year. Heavy inquiries are being received from the Pacific Coast for different forms of steel products and prices there have advanced about $3 a ton. It looks as though the Pacific Coast trade, most of which was going to foreign mills, will again come back to American mills, at least while the war goes on. There are rumors here of another advance of $1 a ton on plates, shapes and bars and this may be announced within a few days."

Steel manufacturers have taken the position since Saturday that in spite of the trade derangements now uppermost, the chances that American steel products in the long run will be higher are many more than that they will go below the profitless levels of recent months. Leading producers have instructed their selling forces to confine sales to early shipments until the situation is clearer.

Ferromanganese may even become the pivot on which the whole steel market will turn. England has put an embargo on all metals. Thousands of tons of English ferromanganese sold to steel manufacturers in this country may not be delivered in many months; and manganese is indispensable to steel manufacture. Stocks at the larger independent domestic works will last from three to five months. Some of the smaller steel companies have but a few weeks' supply. The Steel Corporation, which was a seller of ferromanganese some months ago, has none to offer now. It has fair stocks of manganese ore and is bringing regular cargoes from Brazil. Dealers who import ferromanganese have no stocks and in the past week there has been no market price.

Machinery shipments to Europe are cut off by the war and to every machinery center in the country wire advices have been sent holding up or canceling orders.

Much significance attaches to cables received by steel manufacturers Wednesday saying that the English Government has arranged for national insurance of her merchant vessels so that commerce may continue. This means much for the opening up of the blockade on trade between this country and England. All ocean freights have advanced 25 per cent.

The Steel Corporation, which does 75 per cent. of our export business in iron and steel, is arranging to bring under its ownership vessels it has under charter, heretofore flying the British flag. Thus about 25 vessels will be given American registry when the pending bill is signed by the President and they will suffice to keep up much of our export steel trade. Canada, it is to be remembered, ordinarily takes 50 per cent. of these exports.

In a few instances railroad orders for steel have been held up until the financial outlook clears. Chicago reports several such cases. But new rail buying is reported by other roads, the Carnegie Steel Company booking 25,000 tons in the past week and the Illinois Steel Company 21,000 tons.

Holland has put an embargo on tin and shipments from the Straits are stopped by war risks. Dealers' stocks in this country and tin afloat coming here represent less than a month's supply. The New York price has advanced in the week from 30.50c. to 57.50c. under necessitous buying by small consumers. Large buyers have not been in the market, knowing it was useless.

The oil pipe trade is conspicuous in feeling early adverse effects of war. The Standard Oil Company having suspended export shipments, independent oil producers from whom it buys have no outlet for their product and are curtailing operations. Demand for oil well supplies is naturally much cut down.

Due in part to the rapid advance in the price of pig tin and the possibility of a famine in that metal, the situation in tin plate has changed rapidly. Ten days ago a number of tin plate manufacturers were offering their product at from 10 to 20 cents a box below the basis of contracts on which shipments were still being made. To-day in spite of the shutting off of oil exports, which is one important outlet for tin plate, prices are firmer and later developments of the war will mean an increased demand upon the canning trade.

Bar buying increased in the last week of July, implement manufacturers closing for considerable contracts. Bar capacity is probably more fully sold for the next four months than that in any other line.

The Steel Corporation's bookings of finished steel products in July averaged about 40,000 tons a day and the statement of August 10 is expected to show an increase of nearly 200,000 tons in unfilled orders.

Pig iron production in July, with the blowing in of several steel company furnaces, was at a rate but little less than in June. The total was 1,957,645 tons, or 63,150 tons a day, against 1,917,783 tons in June, or 63,916 tons a day. August opened with 188 furnaces in blast, or 6 less than on July 1, and as many of the furnaces blowing out were of small caliber and those blowing in were large, the active capacity August 1 was 63,935 tons a day, against 63,698 tons a day on July 1.

A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics

At date, one week, one month, and one year previous.

	Aug. 5, 1914.	July 29, 1914.	July 1, 1914.	Aug. 6, 1913.
Pig Iron, Per Gross Ton:				
No. 2 N, Philadelphia	$14.75	$14.75	$14.75	$15.50
No. 2, Valley furnace	13.00	13.00	13.00	14.00
No. 2 Southern, Cin'ti	13.25	13.25	13.50	14.00
No. 2, Birmingham, Ala.	10.00	10.00	10.25	10.75
No. 2, furnace, Chicago*	13.75	13.75	13.75	15.00
Basic, del'd, eastern Pa.	14.00	14.00	14.00	15.25
Basic, Valley furnace	13.00	13.00	13.00	14.25
Bessemer, Pittsburgh	14.90	14.90	14.90	16.40
Malleable Bess., Ch'go*	14.00	14.00	14.00	15.00
Gray forge, Pittsburgh	13.65	13.65	13.65	14.25
L. S. charcoal, Chicago	15.75	15.75	15.75	14.50
Billets, etc., Per Gross Ton:				
Bess. billets, Pittsburgh	**19.50**	19.00	19.00	27.00
O.-h. billets, Pittsburgh	**19.50**	19.00	19.00	27.00
O.-h. sheet bars, P'gh	**20.50**	19.50	20.00	27.50
Forging billets, base, P'gh	25.00	25.00	25.00	34.00
O.-h. billets, Phila	21.90	21.90	21.90	28.00
Wire rods, Pittsburgh	24.50	24.50	24.50	28.00
Old Material, Per Gross Ton:				
Iron rails, Chicago	12.00	12.00	12.25	14.00
Iron rails, Philadelphia	14.00	14.00	15.00	17.50
Carwheels, Chicago	11.25	11.25	11.25	12.75
Carwheels, Philadelphia	11.00	11.00	11.00	12.50
Heavy steel scrap, P'gh	11.50	11.50	11.50	12.50
Heavy steel scrap, Phila	9.75	10.00	10.50	11.25
Heavy steel scrap, Ch'go	9.75	9.75	9.75	10.50
No. 1 cast, Pittsburgh	11.50	11.50	11.50	12.75
No. 1 cast, Philadelphia	12.00	12.00	12.00	13.00
No. 1 cast, Ch'go (net ton)	9.50	9.50	9.75	11.00
Finished Iron and Steel,				
Per Lb. to Large Buyers	Cents.	Cents.	Cents.	Cents.
Bess. rails, heavy, at mill	1.25	1.25	1.25	1.25
Iron bars, Philadelphia	1.17½	1.17½	1.17½	1.42½
Iron bars, Pittsburgh	1.15	1.15	1.25	1.65
Iron bars, Chicago	**1.07½**	1.05	1.00	1.45
Steel bars, Pittsburgh	1.15	1.15	1.10	1.40
Steel bars, New York	1.31	1.31	1.26	1.56
Tank plates, Pittsburgh	1.10	1.10	1.10	1.45
Tank plates, New York	1.26	1.26	1.26	1.61
Beams, etc., Pittsburgh	1.15	1.15	1.10	1.45
Beams, etc., New York	1.26	1.26	1.26	1.61
Skelp, grooved steel, P'gh	1.15	1.15	1.15	1.45
Skelp, sheared steel, P'gh	1.20	1.20	1.20	1.50
Steel hoops, Pittsburgh	1.20	1.20	1.25	1.60
Sheets, Nails and Wire,				
Per Lb. to Large Buyers:	Cents.	Cents.	Cents.	Cents.
Sheets, black, No. 28, P'gh	1.80	1.80	1.80	2.25
Galv. sheets, No. 28, P'gh	2.75	2.75	2.75	3.25
Wire nails, Pittsburgh	1.55	1.55	1.50	1.70
Cut nails, Pittsburgh	1.55	1.55	1.55	1.60
Fence wire, base, P'gh	1.35	1.35	1.30	1.55
Barb wire, galv., P'gh	1.95	1.95	1.90	2.20
Coke, Connellsville,				
Per Net Ton at Oven:				
Furnace coke, prompt	*$1.70*	$1.75	$1.75	$2.50
Furnace coke, future	1.85	1.85	1.85	2.50
Foundry coke, prompt	2.25	2.25	2.30	2.90
Foundry coke, future	2.35	2.35	2.50	3.00
Metals,				
Per Lb. to Large Buyers:	Cents.	Cents.	Cents.	Cents.
Lake copper, New York	*12.87½*	13.37½	13.87½	15.37½
Electrolytic copper, N. Y.	*12.50*	13.00	13.40	15.12½
Spelter, St. Louis	*4.85*	4.95	4.90	5.45
Spelter, New York	*5.00*	5.10	5.05	5.60
Lead, St. Louis	*3.72½*	3.75	3.77½	4.37½
Lead, New York	3.90	3.90	3.90	4.50
Tin, New York	**37.00**	30.87½	30.45	41.50
Antimony, Hallett's, N. Y.	**8.00**	6.75	6.75	7.75
Tinplate, 100-lb. box, P'gh	$3.25	$3.25	$3.30	$3.60

*The average switching charge for delivery to foundries in the Chicago district is 50c. per ton.

Finished Iron and Steel f. o. b. Pittsburgh

Freight rates from Pittsburgh, in carloads, per 100 lb.: New York, 16c.; Philadelphia, 15c.; Boston, 18c.; Buffalo, 11c.; Cleveland, 10c.; Cincinnati, 15c.; Indianapolis, 17c.; Chicago, 18c.; St. Louis, 22½c.; Kansas City, 42½c.; Omaha, 42½c.; St. Paul, 32c.; Denver, 84½c.; New Orleans, 30c.; Birmingham, Ala., 45c.; Pacific coast, 80c. on plates, structural shapes and sheets No. 11 and heavier; 85c. on sheets Nos. 12 to 16; 95c. on sheets No. 16 and lighter; 65c. on wrought pipe and boiler tubes.

Plates.—Tank plates, ¼ in. thick, 6¼ in. up to 100 in. wide, 1.10c. to 1.15c., base, net cash, 30 days.

Structural Material.—I-beams, 3 to 15 in.; channels, 3 to 15 in.; angles, 3 to 6 in. on one or both legs, ¼ in. thick and over, and zees, 3 in. and over 1.15c. Extras on other shapes and sizes are as follows:

	Cents per lb.
I-beams over 15 in.	.10
H.beams over 18 in.	.10
Angles over 6 in., on one or both legs	.10
Angles, 3 in. on one or both legs, less than ¼ in. thick, as per steel bar card, Sept. 1, 1909	.70
Tees, structural sizes (except elevator, handrail, car truck and conductor rail)	.05
Channels and tees, under 3 in. wide, as per steel bar card, Sept. 1, 1909	.20 to .80
Deck beams and bulb angles	.30
Hand rail tees	.75
Cutting to lengths, under 3 ft. to 2 ft. inclusive	.25
Cutting to lengths, under 2 ft. to 1 ft. inclusive	.50
Cutting to lengths, under 1 ft.	1.55

No charge for cutting to lengths 3 ft. and over.

Wire Products.—Fence wire, Nos. 0 to 9, per 100 lb., terms 60 days or 2 per cent. discount in 10 days, carload lots to jobbers, annealed, $1.35; galvanized, $1.75. Galvanized barb wire and fence staples to jobbers, $1.95; painted, $1.55. Wire nails to jobbers, $1.55. Woven wire fencing, 73½ per cent. off list for carloads; 72½ off for 1000-rod lots; 71½ off for less than 1000-rod lots.

The following table gives the price to retail merchants on fence wire in less than carloads, with the extras added to the base price:

Plain wire, per 100 lb.

Nos.	0 to 9	10	11	12&12½	13	14	15	16
Annealed	$1.50	$1.55	$1.60	$1.65	$1.75	$1.85	$1.95	$2.05
Galvanized	1.95	1.95	2.00	2.05	2.15	2.25	2.65	2.75

Wire Rods.—Bessemer, open-hearth and chain rods, $24.50 to $25.

Wrought Pipe.—The following are the jobbers' carload discounts on the Pittsburgh basing card on steel pipe in effect from April 20, 1914, and iron pipe from June 2, 1913, all full weight:

Butt Weld

Steel: Inches	Black	Galv.	Iron: Inches	Black	Galv.
⅛, ¼ and ⅜	73	52½	⅛ and ¼	66	47
½	77	66½	⅜	65	46
¾ to 3	80	71½	½	69	56
			¾ to 2½	72	61

Lap Weld

2	77	68½	1¼	56	45
2½ to 6	79	70½	1½	67	56
7 to 12	76	65½	2	68	58
13 to 15	53	..	2½ to 4	70	61
			4½ to 6	70	61
			7 to 12	68	55

Reamed and Drifted

1 to 3, butt	78	69½	1 to 1½, butt	70	59
2, lap	75	66½	2, butt	70	59
2½ to 6, lap	77	68½	1¼, lap	54	43
			1½, lap	65	54
			2, lap	66	56
			2½ to 4, lap	68	59

Butt Weld, extra strong, plain ends

⅛, ¼ and ⅜	68	57½	⅜	63	52
½	73	66½	½	67	60
¾ to 1½	77	70½	¾ to 1½	71	62
2 to 3	78	71½	2 and 2½	72	63

Lap Weld, extra strong, plain ends

2	74	65½	1½	65	59
2½ to 4	76	67½	2	66	58
4½ to 6	75	66½	2½ to 4	70	61
7 to 8	68	57½	4½ to 6	69	60
9 to 12	63	52½	7 to 8	63	53
			9 to 12	58	47

Butt Weld, double extra strong, plain ends

½	63	56½	½	57	49
¾ to 1½	66	59½	¾ to 1½	60	52
2 to 2½	68	61½	2 and 2½	62	54

Lap Weld, double extra strong, plain ends

2	64	57½	2	55	49
2½ to 4	66	59½	2½ to 4	60	54
4½ to 6	65	58	4½ to 6	59	53
7 to 8	58	47½	7 to 8	52	42

To the large jobbing trade an additional 5 and 2½ per cent. is allowed over the above discounts.

The above discounts are subject to the usual variation in weight of 5 per cent. Prices for less than carloads are two (2) points lower basing (higher price) than the above discounts on black and three (3) points on galvanized.

Boiler Tubes.—Discounts to jobbers, in carloads, in effect from May 1, 1914, on steel and from January 2, 1914, on iron, are as follows:

Lap Welded Steel		*Standard Charcoal Iron*	
1¾ and 2 in.	62	1½ in.	45
2¼ in.	59	1¾ and 2 in.	49
2½ and 2¾ in.	65	2¼ in.	45
3 and 3¼ in.	70	2½ to 2¾ in.	54
3½ to 4½ in.	72	3 and 3¼ in.	57
5 and 6 in.	65	3½ to 4½ in.	60
7 to 13 in.	62	5 and 6 in.	49

Locomotive and steamship special charcoal grades bring higher prices.

2½ in. and smaller, over 18 ft., 10 per cent. net extra.

2¾ in. and larger, over 22 ft., 10 per cent. net extra.

Less than carloads will be sold at the delivered discounts for carloads, lowered by two points for lengths 22 ft. and under to destinations east of the Mississippi River; lengths over 22 ft., and all shipments going west of the Mississippi River must be sold f.o.b. mill at Pittsburgh basing discount, lowered by two points. On standard charcoal iron tubes for desirable orders the above discounts are shaded an extra 5, and occasionally two 5's by some makers.

Sheets.—Makers' prices for mill shipment on sheets of U. S. Standard gauge, in carload and larger lots, on which jobbers charge the usual advance for small lots from store, are as follows, f.o.b. Pittsburgh, terms 30 days net or 2 per cent. cash discount in 10 days from date of invoice:

Blue Annealed Sheets

	Cents per lb.
Nos. 3 to 8	1.30
Nos. 9 to 10	1.35
Nos. 11 and 12	1.40
Nos. 13 and 14	1.45
Nos. 15 and 16	1.55

Box Annealed Sheets, Cold Rolled

	Cents per lb.
Nos. 10 and 11	1.45 to 1.50
No. 12	1.45 to 1.50
Nos. 13 and 14	1.50 to 1.55
Nos. 15 and 16	1.55 to 1.60
Nos. 17 to 21	1.60 to 1.65
Nos. 22 and 24	1.65 to 1.70
Nos. 25 and 26	1.70 to 1.75
No. 27	1.75 to 1.80
No. 28	1.80 to 1.85
No. 29	1.85 to 1.90
No. 30	1.95 to 2.00

Galvanized Sheets of Black Sheet Gauge

	Cents per lb.
Nos. 10 and 11	1.75 to 1.80
No. 12	1.85 to 1.90
Nos. 13 and 14	1.85 to 1.90
Nos. 15 and 16	2.00 to 2.05
Nos. 17 to 21	2.15 to 2.20
Nos. 22 and 24	2.30 to 2.35
Nos. 25 and 26	2.45 to 2.50
No. 27	2.60 to 2.65
No. 28	2.75 to 2.80
No. 29	2.90 to 2.95
No. 30	3.05 to 3.10

Pittsburgh

PITTSBURGH, PA., August 4, 1914.

The probable effect of the European war is about the only subject talked of in the trade, even the railroad rate decision expected so long, and which was handed down August 1, having had to take a back seat. One perceptible effect of the war is that prices on practically all lines of finished iron and steel are firmer, and it would not be surprising if advances in prices on leading finished products should soon be made. The trade here is greatly concerned as to the future supply of ferromanganese and pig tin. If the war should continue any length of time, it is not unlikely a number of steel plants might have to close down for lack of ferromanganese, and some of the tin plate mills would also be embarrassed because of inability to get pig tin. Two tin-plate makers are short of tin, and have been trying to buy in New York for several days. As near as can be learned, the larger users of ferromanganese have a supply on hand good for three to five months. Subsidiaries of the Steel Corporation have had to suspend foreign shipments of finished material, and it is stated that a few foreign orders have been canceled. The Jones & Laughlin Steel Company has been sending quite a large tonnage of wire products abroad, and has been notified by the railroads that no more foreign shipments will be received. The consensus of opinion is that if the war goes on it will mean a tremendous demand from all of the European countries involved for our iron and steel products if transportation facilities can be furnished. The local pig-iron market is practically lifeless, but the probability of a heavier demand for steel products has resulted in an advance in the prices of billets and sheet bars, both here and at Youngstown. Three or four sheet mills have put their price on No. 28 black at 1.85c., and on No. 28 galvanized at 2.80c., and are holding firm at these figures. Coke and scrap are still dull and neglected.

Pig Iron.—W. P. Snyder & Co. report the average prices of basic iron in July to have been $13 and Bessemer $14, at Valley furnace, these being the same as the average prices for April, May and June. There is no new inquiry for pig iron, except in very small lots, but prices are fairly strong. We quote as follows: Bessemer, $14; basic, $13; malleable Bessemer, $13; No. 2 foundry, $13 to $13.50 (several sellers holding for the higher price); gray forge, $12.75, all at Valley furnace, with a freight rate of 90c. a ton for Cleveland or Pittsburgh delivery.

Billets and Sheet Bars.—Effective Tuesday, August 4, the Carnegie Steel Company put its minimum price on Bessemer and open-hearth sheet bars on new orders to $20.50, f.o.b. mill, Pittsburgh. The Youngstown makers are also asking higher prices, quoting about $20 at mill. An increased consumption of both billets and sheet bars is looked for if the European war should go on, as there probably would be larger exports of both sheets and tin plates. We now quote Bessemer and open-hearth billets at $19.50, and Bessemer and open-hearth sheet bars at $20.50, f.o.b. mill, Pittsburgh. We quote Bessemer and open-hearth billets at $19 to $19.50, and Bessemer and open-hearth sheet bars, $20 to $20.50, f.o.b. maker's mill, Youngstown.

Ferroalloys.—Late last week all prices on foreign ferromanganese were withdrawn, but before this was done 2000 tons or more was sold at $38 and higher, f.o.b. Baltimore. However, if the war goes on the material cannot be shipped from the other side, and deliveries on these contracts may never be made. The Carnegie Steel Company is still making all the ferromanganese it uses, but announces that it will not sell in the open market, preferring to conserve its resources and be in position to supply its own demands. It is said that all consumers of ferromanganese in the Pittsburgh, the two valleys and in the Wheeling district have an ample supply for the next three to five months. Predictions are made that if the war lasts several months ferromanganese may go to $150 a ton or higher. As yet prices on ferrosilicon have not been affected, but they may be higher later in sympathy with ferromanganese. We quote 50 per cent. ferrosilicon, in lots up to 100 tons, at $73; over 100 tons to 600 tons, $72; over 600 tons, $71, delivered in the Pittsburgh district. On 10 per cent. ferrosilicon the quotation is $19; 11 per cent., $20, and 12 per cent., $21, f.o.b. cars Jackson County, Ohio, or Ashland, Ky., furnace. We quote 20 per cent., spiegeleisen at $25 at furnace. We quote ferrotitanium at 8c. per lb. in carloads; 10c. in 2000-lb. lots and over, and 12½c. in less than 2000-lb. lots.

Muck Bar.—We continue to quote the local market on muck bar, made from all pig iron, at $27, delivered to buyers' mills in the Pittsburgh district.

Structural Material.—Inquiries have been more active and some large jobs have been closed. The American Bridge Company has taken the Metropolis bridge, 17,000 tons, the material to be rolled by the Carnegie Steel Company. The McClintic-Marshall Company has taken 800 to 900 tons for a new warehouse for the Newport Rolling Mill Company, Newport, Ky., also 1400 tons for a new warehouse for the Bingham Company, Cleveland, Ohio, 800 tons for the Sixth street pier for the North River, New York City, 300 to 400 tons for new buildings for the Verona Steel Castings Company, Verona, Pa., and 150 tons for a new foundry building for the Pittsburgh Foundry & Machine Company, this city. The Jones & Laughlin Steel Company has taken 900 tons for new buildings for the Westinghouse Electric & Mfg. Company at East Pittsburgh, Pa., 150 tons for a new public school building at Salem, Ohio, and will furnish 1500 tons of plain material for the new plant of the American Enameling Company at Massillon, Ohio, the Massillon Bridge & Structural Company to fabricate the steel and erect the building. W. N. Kratzer & Co. have taken 150 tons for new buildings for the Gem Mfg. Company, Pittsburgh. The Carnegie Steel Company will furnish 1500 tons of plain material for the new Detroit-Superior bridge at Cleveland, the McMyler Interstate Company having the contract for the structure. Prices on structural material are firm and we quote beams and channels up to 15-in. at 1.15c., f.o.b. Pittsburgh.

Plates.—Orders for steel cars are still scarce and inquiries are light. Now that the freight rate decision has been made, the car companies are expecting more business. The Pressed Steel Car Company has taken 500 composite gondolas for the Delaware, Lackawanna & Western and 200 steel hoppers for the Erie. The Southern Pacific inquiry for 4600 box, hopper, stock, tank and caboose cars has not been closed. The Toledo

& Ohio Central has placed 1000 freight cars with the Haskell & Barker Car Company, and the Minneapolis, St. Paul & Sault Ste Marie has ordered 1500 from the Pullman Company. Prices on plates are firmer. We quote ¼-in. and heavier tank plate at 1.10c. to 1.15c., f.o.b. Pittsburgh, but only for a very desirable order, and spot shipment, would the lower price be made.

Steel Rails.—The report that the Baltimore & Ohio has placed 6000 tons with the Carnegie Steel Company is untrue. The latter company got 500 tons as part of a recent order placed by the Southern Railway. Bids have gone in on 50,000 to 60,000 pairs of splice bars for the Pennsylvania Lines West. The order will probably be divided between Carnegie and Cambria. In July the Carnegie Steel Company booked a number of contracts for light rails for delivery over the remainder of this year at prices slightly higher than are ruling for prompt shipment. The new demand for light rails is only fair. We quote light rails rolled from billets as follows: 25, 30, 35, 40 and 45 lb. sections, 1.10c.; 16 and 20 lb., 1.15c.; 12 and 14 lb., 1.20c., and 8 and 10 lb., 1.25c., in carload lots, f.o.b. Pittsburgh. For large lots these prices might be shaded.

Steel Wheels.—The Delaware, Lackawanna & Western will use cast-iron wheels on the 500 cars it has just placed with the Pressed Steel Car Company. We quote 33-in. engine truck forged steel wheels at $22 to $24; 36-in., $23 to $25; 33-in. tender wheels, $18 to $18.50; 36-in. passenger train car and tender wheels, $26 to $26.50, and 33-in. freight car wheels at $15.50 to $16, all f.o.b. Pittsburgh.

Skelp.—The local market is quiet, but prices are reported firmer than for some time. We quote: Grooved steel skelp, 1.15c. to 1.20c.; sheared steel skelp, 1.20c. to 1.25c.; grooved iron skelp, 1.50c. to 1.55c.; sheared iron skelp, 1.60c. to 1.65c., delivered to consumers' mills in the Pittsburgh district.

Wire Rods.—The new demand is light and specifications against contracts are only fair. We continue to quote Bessemer, open-hearth and chain rods at $24.50 to $25, f.o.b. maker's mill, Pittsburgh, but on new inquiries it is probable $25 would be the minimum quotation.

Iron and Steel Bars.—Actual orders and contracts booked by the Carnegie Steel Company in its steel-bar department in July showed an increase of about 30,000 tons over June. Other makers booked heavy contracts for delivery in the third quarter and over the last half, while with the implement makers deliveries in some cases run through the first quarter of next year. All the mills have more business on their books than for a long time, and if the contracts are specified for will be busy the next three or four months at least. The new demand for iron bars is only fair and none of the mills is running full. We quote steel bars for third quarter delivery at 1.15c. and for fourth quarter 1.20c., maker's mill. We quote common iron bars, made from scrap and muck bar, at 1.15c. to 1.20c., f.o.b.. maker's mill, Pittsburgh. Regular extras for twisting reinforcing steel bars over the base price are as follows: ¾-in. and over, $1; ½ to 11/16-in., $1.50; under ½-in., $2.50 per net ton. These extras are not always observed.

Hoops and Bands.—Some small orders for bands are being booked at the new price of 1.15c., but most consumers covered through third quarter at 1.10c. before the advance was made. The new demand for hoops is still quiet but is expected to be better late this month or early in September. We quote steel bands at 1.15c. on new orders, extras as per the steel bar card, and steel hoops at 1.20c. to 1.25c., the lower price being on desirable orders for prompt shipment.

Sheets.—The new demand for black and galvanized sheets is more active than for some time; specifications against contracts are better and prices are firmer. Three or four leading sheet mills have put their minimum on No. 28 black at 1.85c., and on No. 28 galvanized at 2.80c. One interest has quoted 2.90c. on No. 28 galvanized on small orders. The American Sheet & Tin Plate Company's shipments of sheets and tin plate in July were heavier than in any one month since last March; it is operating its sheet mills close to 75 per cent. of capacity, but is running only four days a week. We quote Nos. 9 and 10 blue annealed sheets at 1.35c.; No. 28 Bessemer black, 1.80c. to 1.85c.; No. 28 galvanized, 2.75c. to 2.80c.; No. 28 black plate, tin mill sizes, H. R. and A., 1.85c.; Nos. 29 and 30, 1.90c. The above prices are in carload lots, f.o.b. Pittsburgh, jobbers charging the usual advances for small lots from store.

Tin Plate.—A good deal of commotion has been caused in the tin-plate trade by the war, the price of tin having gone up about 20c. a lb. in the week. Some consumers of tin plate are badly scared and are trying to place orders ahead and some speculative buying has also appeared. Several of the larger makers of tin plate state they will not accept orders except from regular customers, desiring to conserve their resources in pig tin for their own trade. The American Sheet & Tin Plate Company is operating its tin mills to about 92 per cent. of capacity, running four days a week. Prices on tin plate are decidedly firmer, and may be a good deal higher in the near future. We quote 100-lb. 14 x 20 coke plates at $3.25 to $3.35, and 100-lb. 14 x 20 terne plates at $3.15 to $3.25, f.o.b. Pittsburgh.

Shafting.—The tone of the shafting market is firmer, and makers report a slightly better demand, while specifications are a little heavier. The Jones & Laughlin Steel Company has been doing quite a foreign business in shafting, but this has been practically suspended on account of the war. We quote cold-rolled shafting at 66 or 67 per cent. off in carload lots, which represents the general market, and small lots at 63 to 65 per cent. off, delivered in base territory.

Spikes.—Railroads are placing orders for spikes a little more freely. The Erie has given the Jones & Laughlin Steel Company 2000 kegs, and the Baltimore & Ohio is sending in some good specifications. Railroads still insist on prompt shipments against orders. We quote standard sizes of railroad and boat spikes at $1.35 to $1.40 and small railroad and boat spikes at $1.45 to $1.50 per 100 lb. in carload lots, f.o.b. Pittsburgh. It is stated that some makers on new orders are holding standard sizes of railroad spikes at $1.40 minimum.

Merchant Steel.—One leading maker reports its July orders to have been about 30 per cent. heavier than June. New buying is still mostly in small lots to cover current needs, but there is a fair demand for seasonable steels. Heavy contracts for implement steel were placed in July for delivery over the remainder of this year, and specifications against these are fair. Prices are more or less unsteady, and on small lots are about as follows: Iron finished tire, ½ x 1½ in. and larger, 1.30c., base; under ½ x 1½ in., 1.45c.; planished tire, 1.50c.; channel tire, ¾ to ⅞ and 1 in., 1.80c. to 1.90c.; 1⅛ in. and larger, 1.90c.; toe calk, 1.90c. to 2c., base; flat sleigh shoe, 1.65c.; concave and convex, 1.70c.; cutter shoe, tapered or bent, 2.20c. to 2.30c.; spring steel, 1.90c. to 2c.; machinery steel, smooth finish, 1.70c. We quote cold-rolled strip steel as follows: Base rates for 1 in. and 1½ in. and wider, under 0.20 carbon, and No. 10 and heavier, hard temper, 3.25c.; soft, 3.50c.; coils, hard, 3.15c.; soft, 3.40c.; freight allowed. The usual differentials apply for lighter sizes.

Wire Products.—The war is affecting the local wire trade. Exporters have asked shipments to be suspended, while several local wire makers are voluntarily holding up foreign orders. Two of them have been doing a heavy export business in wire products for some months, but this is now stopped. Specifications against contracts are fairly good, but new demand at the advanced price of $1 a ton is quiet, as large jobbers and consumers covered ahead for 60 days or longer prior to the advance. On new orders we quote: Wire nails, $1.55; plain annealed wire, $1.35; galvanized barb wire and fence staples, $1.95; painted barb wire, $1.55, all f.o.b. Pittsburgh, with actual freight added to point of delivery, terms 30 days net, less 2 per cent. off for cash in 10 days. We quote steel cut nails at $1.55 to $1.60, f.o.b. Pittsburgh, in carload lots.

Nuts, Bolts and Rivets.—Several makers of nuts and bolts report a slightly increased demand, but as a rule new buying is mostly for small lots. Prices

are said to be slightly stronger, but discounts are still more or less shaded, depending on the orders and deliveries wanted. We quote buttonhead structural rivets in carload lots at 1.50c. and in small lots at 1.60c.; cone-head boiler rivets, 1.60c. in carload lots and 1.65c. in small lots, with terms 30 days net, 2 per cent. for cash in 10 days. Discounts on nuts and bolts are as follows in lots of 300 lb. or over, delivered within a 20c. freight radius of maker's works:

Coach and lag screws	80 and 5% off
Small carriage bolts, cut threads	80% off
Small carriage bolts, rolled threads	80 and 5% off
Large carriage bolts	75 and 5% off
Small machine bolts, cut threads	80 and 5% off
Small machine bolts, rolled threads	80 and 10% off
Large machine bolts	75 and 10% off
Machine bolts, c.p.c. & t nuts, small	80% off
Machine bolts, c.p.c. & t nuts, large	75 and 5% off
Square h.p. nuts, blank and tapped	$6.30 off list
Hexagon nuts	$7.20 off list
C.P.C. and r sq. nuts, blank and tapped	$6.00 off list
Hexagon nuts, ⅝ and larger	$7.20 off list
Hexagon nuts, smaller than ½ in.	$7.80 off list
C.P. plain square nuts	$5.50 off list
C.P. plain hexagon nuts	$5.90 off list
Semi-fin. hex. nuts, ½ in. or under	85, 10 & 10% off
Semi-fin. hex. nuts, ⅝ in. and larger	85 & 5% off
Rivets, 7/16 x 6½, smaller & shorter	80, 10 & 5% off
Rivets, tin plated, packages	80, 10 and 5% off
Rivets, metallic tinned, packages	80, 10 and 5% off
Standard cap screws	70, 10 and 10% off
Standard set-screws	75, 10 and 10% off

Standard Pipe.—The National Tube Company has taken an order for 54 miles of 16-in. line pipe for the Arkansas Natural Gas Company. The war is hurting the pipe trade, as a number of independent oil companies that sell their product to the Standard Oil Company are trying to cancel orders for casing and other oil well supplies, because the latter company has notified customers from whom it buys oil that for the present it will not buy and this leaves no market for their product. There has been a sharp restriction in oil-well drilling, and it will probably be restricted still more. The new demand for merchant pipe has quieted down, as jobbers and the consuming trade are a good deal at sea as to the future. Discounts on standard iron and steel pipe are quite firmly held.

Boiler Tubes.—Makers report a fair demand for locomotive tubes, but merchant tubes are quiet. Discounts are still more or less shaded, depending on the size of the order and deliveries wanted.

Old Material.—While the local scrap market remains dull, the European war scare is said to have firmed up prices, as scrap dealers believe the steel mills will be running at a heavier rate in the near future. Several of them, who have fair sized stocks of scrap in their yards are not making special efforts to sell, looking for better prices. Dealers quote, per gross ton, for delivery to consumers' mills in the Pittsburgh and nearby districts that take the same rates of freight, as follows:

Selected heavy steel melting scrap, Steubenville, Follansbee, Brackenridge, Sharon, Monessen, Midland and Pittsburgh delivery	$11.75 to $12.00
Ordinary steel melting scrap	11.50 to 11.75
Compressed side and end sheet scrap	11.00 to 11.25
No. 1 foundry cast	11.50 to 11.75
No. 2 foundry cast	10.25 to 10.50
Bundled sheet scrap, f.o.b. consumers' mills, Pittsburgh district	8.25 to 8.50
Rerolling rails, Newark and Cambridge, Ohio, Cumberland, Md., and Franklin, Pa.	12.75 to 13.00
No. 1 railroad malleable stock	11.00 to 11.25
Railroad grate bars	10.25 to 10.50
Low phosphorus melting stock	14.25 to 14.50
Iron car axles	22.50 to 23.00
Steel car axles	15.50 to 16.00
Locomotive axles, steel	20.00 to 20.50
No. 1 busheling scrap	10.25 to 10.50
No. 2 busheling scrap	7.25 to 7.50
Machine shop turnings	7.75 to 8.00
Old carwheels	11.25 to 11.50
Cast-iron borings	8.25 to 8.50
†Sheet bar crop ends	12.00 to 12.25
Old iron rails	13.75 to 14.00
No. 1 railroad wrought scrap	11.50 to 11.75
Heavy steel axle turnings	8.50 to 8.75
Heavy breakable cast scrap	11.25 to 11.50

†Shipping point.

Coke.—The market is practically lifeless and prices are lower. Standard makes of blast-furnace coke for prompt shipment are offered freely at $1.75 per ton, and it is stated that this price has been named on contracts for the remainder of the year. None of the furnace companies whose contracts for coke expired July 1 is in the mood to make new contracts, but will buy from month to month. The new demand for foundry coke is quiet. We quote standard makes of furnace coke for prompt shipment at $1.75 per net ton at oven, and for delivery over the last half of the year at about $1.85, but this price could be shaded. It is said two or three interests that were holding their furnace coke at $2 for last half of the year are now willing to take a lower price. Standard 72-hr. foundry coke is selling at $2.25 to $2.35 for prompt shipment, and from $2.35 to $2.40 for delivery over the remainder of this year. The Connellsville Courier reports the output of coke in the upper and lower Connellsville regions for the week ended July 25 as 268,290 net tons, an increase over the previous week of but 90 tons.

Chicago

CHICAGO, ILL., August 5, 1914.—(*By Wire.*)

Progress toward a better situation in the iron and steel business has suffered a severe check by reason of the European war situation. Conservatism again predominates. Direct effects are largely confined thus far to financial matters and postponements in the placing of business are directly traceable to the uncertainty of credits and collections as well as the possibility of tight money. Specific instances of business being held up are not numerous, but buyers have become very cautious. The announcement of the freight rate decision secured scarcely more than passing attention, but evidences of relief are apparent following the prompt action of the Government in supplying funds for the movement of crops and in averting the threatened railroad strike in the West. Specifications for steel products during the last week of July run up to a very satisfactory total. This was due in a measure to the expiration of some low priced contracts August 1. An advance of from $1 to $2 a ton in sheets was announced by the principal producers, most of whom are now fairly well fixed as to tonnage into the fourth quarter. The interruption to ocean shipping has an important bearing on the copper and tin markets, while for ferromanganese it is impossible to secure quotations. The buying of pig iron is not entirely at a standstill, but there is no inquiry of particular importance.

Pig Iron.—A few inquiries are in the market for lots of pig iron up to 500 tons of both Northern and Southern, but the majority of the melters show little interest. Buying is for delivery throughout the year, all of which business can be placed at current quotations. Prices of Lake iron remain unchanged on the basis of $14 at the furnace for No. 2, but trading in Southern iron presents an increasing number of quotations on the basis of $10 Birmingham. Consumers of ferromanganese are entirely at sea as to the source of further supply beyond their present stocks and some extravagant offers are being made. There are no authorized quotations available and domestic furnace interests are anticipating the substitution of spiegeleisen for ferromanaganese. The following quotations are for iron delivered at consumers' yards, except those for Northern foundry, malleable Bessemer and basic iron, which are f.o.b. furnace and do not include a local switching charge averaging 50c. a ton:

Lake Superior charcoal	$15.75 to $16.75
Northern coke foundry, No. 1	14.50 to 15.00
Northern coke foundry, No. 2	13.75 to 14.25
Northern coke foundry, No. 3	13.50 to 14.00
Southern coke, No. 1 f'dry and 1 soft	14.85 to 15.10
Southern coke, No. 2 f'dry and 2 soft	14.35 to 14.60
Malleable Bessemer	14.00 to 14.25
Standard Bessemer	.... 17.00
Basic	13.25 to 13.50
Low phosphorus	21.00 to 21.75
Jackson Co. and Ky. silvery, 6 per cent.	16.90 to 17.40
Jackson Co. and Ky. silvery, 8 per cent.	17.90 to 18.40
Jackson Co. and Ky. silv'y, 10 per cent.	18.90 to 19.40

(*By Mail*)

Rails and Track Supplies.—The holding up of an order for a round tonnage of rails for a Western road and the indefinite postponement of extensive track work by a street railway system are specific instances which indicate the feeling of apprehension created by the war

situation and its effect on finances and credit. The market during the week brought out no reports of new work. We quote standard railroad spikes at 1.50c. to 1.55c., base; track bolts with square nuts, 1.90c. to 2c., base, all in carload lots, Chicago; tie plates, $25.50 to $26, f.o.b. mill net ton; standard section Bessemer rails, Chicago, 1.25c., base; open hearth, 1.34c.; light rails, 25 to 45 lb., 1.25c.; 16 to 20 lb., 1.30c.; 12 lb., 1.35c.; 8 lb., 1.40c.; angle bars, 1.50c., Chicago.

Structural Material.—Consumers of structural material have been active in placing specifications before the expiration of the low priced period, and for most of the mills the week's tonnage was quite satisfactory. Interest attaches to the probability of delay in the building of the Metropolis Bridge, for which 18,000 tons was awarded to the American Bridge Company a week ago, and some disappointment is also felt because of suspensions in orders for cars and car-building material occasioned by the uncertain financial outlook. Contracts for fabricated material placed during the week were small in tonnage and few in number. Among them were 143 tons for the American Boston Mining Company to Worden-Allen Company; 115 tons for the Agricultural College in St. Paul, to the St. Paul Foundry Company; 288 tons for the Independent Baking Company, Davenport, Iowa, to the Rochester Bridge Company; 300 tons for the Nixon Building, Reno, Nev., to the Ralston Iron Works; 231 tons for the Duluth, Missabe & Northern Railway to the American Bridge Company, and 111 tons for the Pullman School, to the Vierling Iron Works. The placing of some business on the basis of 1.15c., Pittsburgh, including one lot of 400 tons, is noted, but for the most part business now being taken is in the form of specifications booked at 1.28c., Chicago, or better. We quote for Chicago delivery, mill shipment, 1.25c. to 1.33c.

Local jobbers state that in numbers of orders their business has been decidedly active and a continuance of business uncertainty is not unlikely to operate toward an increasing store business as against mill shipments. We quote for Chicago delivery, from jobbers' stock, 1.75c.

Plates.—Local plate mills are now comfortably fixed for the present quarter at least, as regards their rolling schedules, and in fact are booked ahead about as far as they care to be at present prices. The weak phase of the situation continues to be lack of demand on the part of the plate users in the boiler, tank and other general industrial lines. We quote for Chicago delivery, from mill, 1.25c. to 1.33c.

We quote for Chicago delivery of plates, from jobbers' stock, 1.75c.

Sheets.—Although little publicity was given to the fact, it now appears that the leading interest advanced its prices on sheets at about the time minimum quotations were withdrawn on other steel products. During the week other sheet makers have made similar announcements and the leading producers are now quoting a minimum of 1.35c. for blue annealed, 1.80c. for one pass and 2.80c. for galvanized, all Pittsburgh basis. Lower prices than these have not entirely disappeared but where advances have been made that position seems to be taken with considerable firmness. Recent bookings of sheets appear to have been heavier than was realized. We continue to quote for Chicago delivery from mill: No. 10 blue annealed, 1.53c. to 1.58c.; No. 28 black, 1.98c.; No. 28 galvanized, 2.98c.

We quote for Chicago delivery from store as follows, minimum prices applying on bundles of 25 or more: No. 10 blue annealed, 1.85c.; No. 28 black, 2.35c. to 2.45c.; No. 28 galvanized, 3.35c. to 3.45c.

Bars.—Local bar mills have been fortified in their efforts to secure better prices by improved bookings and it is now difficult to do better than 1.07½c., in this market. Steel-bar specifications have been coming in with less restraint also. We quote for mill shipments as follows: Bar iron, 1.07½c. to 1.10c.; soft steel bars, 1.25c. to 1.33c.; hard steel bars, 1.25c. to 1.30c.; shafting in carloads, 65 per cent. off; less than carloads, 60 per cent. off.

We quote store prices for Chicago delivery: Soft steel bars, 1.65c.; bar iron, 1.65c.; reinforcing bars, 1.65c. base, with 5c. extra for twisting in sizes ½ in. and over and usual card extras for smaller sizes; shafting 60 per cent. off.

Rivets and Bolts.—The first improvement in many months is apparent in rivet quotations and prices are now from $1 to $2 a ton higher. Only the most attractive orders appear to be bringing out lower quotations than 1.68c., Chicago. With a substantial proportion of bolt consumers under contract, the market is also better established in this direction and discounts for ordinary business are less liberal. We quote from mill as follows: Carriage bolts up to ⅜ x 6 in., rolled thread, 85-5 to 85; cut thread, 85 to 80-5; larger sizes, 80-5 to 80; machine bolts up to ⅜ x 4 in., rolled thread, 85-10 to 85-5; cut thread, 85-5 to 85; larger sizes, 80-10 to 80-5; coach screws, 85-15 to 85-10; hot pressed nuts, square head, $6.60 off per cwt.; hexagon, $7.60 off per cwt. Structural rivets, ½ to ¼ in., 1.58c., base, Chicago, in carload lots; boiler rivets, 10c. additional .

We quote out of store: Structural rivets, 2.20c.; boiler rivets, 2.30c.; machine bolts up to ¾ x 4 in., 75-15; larger sizes, 70-10-10; carriage bolts up to ⅜ x 6 in., 75-10; larger sizes, 70-15 off; hot pressed nuts, square head, $6, and hexagon, $6.70 off per cwt.

Wire Products.—The adjustment in prices has shifted the market into a more favorable position and specifications are coming in more freely. This is particularly true of wire nails and somewhat in contrast with a falling off in the demand for barb wire. We quote jobbers as follows: Plain wire, No. 9 and coarser, base, $1.53; wire nails, $1.73; painted barb wire, $1.73; galvanized, $2.13; polished staples, $1.83; galvanized, $2.23, all Chicago.

Cast-Iron Pipe.—The city of Chicago has awarded to the largest producer the contract for from 2500 to 5000 tons of pipe, and at Toledo, Ohio, the purchase of 6000 tons is scheduled for August 10. In the aggregate small orders during the week were rather above the average and a total approximating 2000 tons is reported. We quote as follows, per net ton, Chicago: Water pipe, 4 in., $26; 6 to 12 in., $24; 16 in. and up, $23.50, with $1 extra for gas pipe.

Old Material.—The market is weighed down by a burden of old material available for sale that grows increasingly depressing. In addition there is less willingness to trade on the margins that were satisfactory up to a few days ago because of the increased collection risk, and as a result market activity is close to a minimum. The appearance last week of a lot of 600 tons of cast scrap on a railroad list emphasized the particular weakness of this item. About the only additional material offered by the railroads in the current week is 650 tons by the Wabash. We quote, for delivery at buyers' works, Chicago and vicinity, all freight and transfer charges paid, as follows:

Per Gross Ton	
Old iron rails	$12.00 to $12.50
Old steel rails, rerolling	11.50 to 11.75
Old steel rails, less than 3 ft.	10.25 to 10.50
Relaying rails, standard section, subject to inspection	22.00 to 23.00
Old carwheels	11.25 to 11.50
Heavy melting steel scrap	9.75 to 10.00
Frogs, switches and guards, cut apart	9.75 to 10.00
Shoveling steel	9.25 to 9.50
Steel axle turnings	6.75 to 7.25
Per Net Ton	
Iron angles and splice bars	$12.00 to $12.25
Iron arch bars and transoms	12.00 to 12.25
Steel angle bars	8.75 to 9.25
Iron car axles	16.25 to 16.75
Steel car axles	11.75 to 12.25
No. 1 railroad wrought	9.00 to 9.25
No. 2 railroad wrought	8.75 to 9.00
Cut forge	8.50 to 8.75
Steel knuckles and couplers	9.00 to 9.50
Steel springs	9.25 to 9.75
Locomotive tires, smooth	9.50 to 9.75
Machine shop turnings	5.00 to 5.50
Cast borings	4.50 to 5.00
No. 1 busheling	7.50 to 7.75
No. 2 busheling	6.00 to 6.25
No. 1 boilers, cut to sheets and rings	6.50 to 7.00
Boiler punchings	9.25 to 9.75
No. 1 cast scrap	9.50 to 9.75
Stove plate and light cast scrap	8.75 to 9.00
Grate bars	8.50 to 8.75
Railroad malleable	9.00 to 9.25
Agricultural malleable	8.00 to 8.25
Pipes and flues	6.50 to 6.75

The Canton Sheet Steel Company, Canton, Ohio, will enlarge its plant by the erection of two additional buildings. One of these, 75 x 126 ft., will be an addition to its galvanizing plant, and the other, 70 x 600 ft., will be used for warehouse purposes.

Philadelphia

PHILADELPHIA, PA., August 4, 1914.

Discussion of the war in Europe and the consequent events which have moved so rapidly has excluded almost every other topic, even the long and anxiously-looked-for freight rate decision getting but scant attention. Few of the many who have been waiting for the new freight schedule have pretended to do more than hurriedly glance over summaries of the findings. As to the war, difficult as it is at this time to assemble facts from which a logical conclusion may be drawn as to the general effect of the conflict on American commerce and industry, the analytical minds of the trade are trying to satisfy at least themselves as to the probable results. Few agree, except upon the one point, that the impoverishment of a large part of Europe must eventually be paid for by the world at large. The majority, perhaps, hold that the United States, as soon as the first shock is over, will benefit inasmuch as the home market will be all its own, while the export trade may be extended in unexpected directions. Apprehension is felt that the shortage of ships may interfere with exports to Australia and other sections of the world not directly involved in the war. The ferromanganese market is demoralized, all prices having been withdrawn. Interference with the foreign ore trade is already noted, though the situation is not yet serious. Heavy steel products continue to move slowly. Steel bars are the most active on the list and prices have stiffened to the 1.15c. Pittsburgh base. There is little call for structural material hereabouts. Plates have had a rather good run of miscellaneous orders and makers are endeavoring to support the recent advance. Sheets have been in good demand and there is a tendency toward a firmer market. Pig iron has been quiet, though order books have changed but little because of the maintained volume of small sales.

Iron Ore.—The danger which confronts the importation of ore is a scarcity of foreign bottoms operating between neutral countries and this port. The fear is that importations will be hampered by the great demand which may develop for neutral ships to carry cargo of other kinds. A case is reported where an Italian steamer, already under charter, refused to move, although Italy is still neutral. If this tendency becomes widespread, it is pointed out, it will mean an exceptional opportunity for Lake Superior and other ores. Importations up to Saturday, August 1, were about as usual. They included 4800 tons from Cuba and 15,985 tons from Sweden. Of 50 per cent. ferromanganese 291 tons arrived from England.

Pig Iron.—The week has been quiet with the demand for Virginia and Alabama iron relatively better than that for Northern. The order books of most of the sellers are not much changed, the average of recent weeks having kept up through the volume of small sales. The best portent is a growing disposition on the part of well-seasoned members of the trade to limit commitments into the future and to confine their dealings to supplying their regular customers with prompt shipments of moderate-sized lots. They believe that prices will go higher before long. A producer states that he is going to get busy making iron to sell in the fall. Orders were taken here for three 1000-ton lots of low grade Alabama iron for prompt delivery to pipe makers in Philadelphia, Virginia and Birmingham, the price being near $9, furnace. In the last two weeks one seller has booked orders for 16,000 tons of Southern iron for delivery at scattered points. Sales were made involving 1100 tons of the product of a Virginia furnace at the reduction of 25c. per ton, reported a week ago. There has been fair inquiry for special irons, consumers evidently looking to cover their requirements to the end of the year, and a good indication is seen in more active buying by two or three carwheel manufacturers. Steel-making iron has been extremely quiet. Of low phosphorus, only a few scattered small lots have been sold. Price ranges are without change. Quotations for standard brands, delivered to buyers' yards in this district, are as follows:

Eastern Penna. No. 2 X foundry	$14.75 to $15.00
Eastern Penna. No. 2 plain	14.50 to 14.75
Virginia No. 2 X foundry	15.30 to 15.50
Virginia No. 2 plain	15.05 to 15.25
Gray forge	13.75 to 14.00
Basic	14.00
Standard low phosphorus	20.50 to 21.00

Ferroalloys.—The market is demoralized as a result of European conditions, and this applies as much to the English product as to the German. Any communication with the makers of the latter is entirely out of the question, while the English manufacturers have withdrawn their prices. Repeated inquiry by cable as to what price could be quoted has brought the answer that the makers were out of the market. Dealers have received many inquiries from consumers as to the possibility of purchasing spot material, and they have offered $75 to $80 a ton, but the offerings have been refused, and it is understood that some sellers expect to realize at least $100 a ton for the limited amount which is available. One dealer is said to have an option on 500 tons at Baltimore. Sellers are chiefly concerned as to their ability to make future deliveries on contracts. If absolutely necessary some users of 80 per cent. ferromanganese could use spiegeleisen produced in this country, but this has its disadvantages. Ferrosilicon, 50 per cent., is unchanged at $71 to $73, Pittsburgh, according to quantity.

Bars.—Local sellers assert with emphasis that no steel-bar business is being taken below the 1.15c., Pittsburgh basis, or 1.30c., Philadelphia. Bars have held up better than any of the other steel products and the last week has been no exception. In the case of one manufacturer, specifications were received for about 2000 tons and contracts booked for about 5000 tons. Iron bars continue dull at 1.17½c., Philadelphia, with a possibility of 1.15c. being done.

Structural Material.—In this locality there is a dearth of new propositions, though local officers have received plans for some desirable structures to be built in other cities, such, for instance, as the Hamilton County Court House, Cincinnati, Ohio, which will require about 3000 tons, according to estimates, and the William Penn Hotel, Pittsburgh, which also is a good proposition. In this territory there are some small bridges on which bids are to be submitted. July showed considerable improvement, although the mills could be much busier than they are. On shapes, 1.25c., Philadelphia, is not difficult to find, although on small orders 1.30c., and even 1.35c., Philadelphia, is being done.

Plates.—More numerous and larger orders have been received by some of the mills, though others report a falling off in demand upon them, indicating no general pressure for material. Makers are endeavoring to support the action of the large interest in making 1.15c., Pittsburgh, the minimum price, and this means that they are asking 1.30c., Philadelphia, for carloads and 1.33c. for part carloads. In one or two cases at least offers of lower figures have been declined.

Billets.—Eastern Pennsylvania makers of billets are producing at the rate of a little over 50 per cent., mostly for their own consumption in the manufacture of sheets and plates. The demand for the surplus is so poor that steel is steadily piling up. The practically nominal quotation for open-hearth rolling billets is still $21.90, Philadelphia, but it is doubtful if makers would let business get away from them on a question of 50c. per ton. Forging steel runs $4 to $5 a ton higher.

Sheets.—There is a good demand from practically all consumers, some of whom show a willingness to contract ahead, which makers are not so eager to do at present prices. No. 10 blue annealed sheets are still quoted at 1.50c., Philadelphia, but there is a tendency toward a firmer market.

Coke.—The market is quiet, especially in furnace coke. In foundry there has been a moderate run of contract renewals. Quotations are unchanged at $2.40 to $2.70 per net ton at oven for foundry coke and $1.70 to $1.85 for furnace, with some sellers holding out for a higher figure. Freight rates to this city from the principal producing districts are as follows: Connellsville, $2.05; Latrobe, $1.85, and Mountain, $1.65.

Old Material.—About the only activity has been in wrought-iron pipe and No. 1 railroad wrought, although one sale of 500 tons of heavy melting steel is reported, the price having been less than $10. The trade is in a state of uncertainty regarding its present status but there is a feeling that the fall will bring good activity. Quotations for delivery in buyers' yards in this district, covering eastern Pennsylvania, and taking freight rates from 35c. to $1.35 per gross ton, are as follows:

No. 1 heavy melting steel	$9.75 to $10.25
Old steel rails, rerolling	12.00 to 12.50
Low phosphorus heavy melting steel scrap	14.00 to 14.50
Old steel axles	14.00 to 14.50
Old iron axles (nominal)	20.00 to 21.00
Old iron rails	14.00 to 14.50
Old carwheels	11.00 to 11.50
No. 1 railroad wrought	12.00 to 12.50
Wrought-iron pipe	9.50 to 10.00
No. 1 forge fire	8.00 to 8.50
Bundled sheets	8.00 to 8.50
No. 2 light iron	5.00 to 5.50
No. 2 busheling	8.00 to 8.50
Wrought turnings	7.75 to 8.25
Cast borings	8.00 to 8.50
No. 1 cast	12.00 to 12.50
Grate bars, railroad	8.00 to 8.50
Stove plate	8.25 to 8.75
Railroad malleable	9.00 to 9.50

Buffalo

BUFFALO, N. Y., August 4, 1914.

Pig Iron.—Awaiting developments of the effect of the European war on the home market, furnacemen are not inclined to take on new business except at somewhat higher prices. They are simply shipping on orders in hand without endeavoring to effect new sales except for small lots. Some producers of the district announce that $13.25 is their minimum price for No. 2 X foundry, and one interest states it is now quoting $13.50 for that grade, $13.75 for No. 1 foundry, and $14 for 4 per cent. silicon iron, and that a good volume of inquiry is coming in. The general tendency, both among sellers and buyers, is to hold off on new commitments pending more definite indications as to the outcome of events in Europe. We quote as follows, f.o.b. furnace, for current quarter and last half delivery:

No. 1 foundry	$13.25 to $13.75
No. 2 X foundry	13.25 to 13.50
No. 2 plain	13.00 to 13.25
No. 3 foundry	13.00
Gray forge	13.00
Malleable	13.25 to 13.50
Basic	13.25 to 13.75
Charcoal, regular brands and analysis	15.75 to 16.75
Charcoal, special brands and analysis	20.50

Finished Iron and Steel.—The demand keeps up well and prices are firmly held. Keen interest attaches to war news and its bearing on the price situation. Sellers are taking a conservative stand and maintain 1.15c., Pittsburgh, for third quarter on bars, plates and shapes. Two selling agencies, however, announce that outstanding quotations on all steel commodities have been withdrawn and that quotations are being made from day to day to meet special inquiries. A sharp upturn is expected in tin-plate prices, due to increased cost of pig tin, the anticipated heavy demand for canned products, and the effect produced on Welsh mills by England being drawn into war. In wire products considerable new business is reported, and there is no difficulty in contracting over the remainder of the year at the higher prices recently put in effect. Railroads are not accepting goods for export, owing to lack of ocean carriers. In fabricated structural lines business continues fairly active. Bids on the bridge over the Genesee River at Charlotte, N. Y., taking 1400 tons, go in Thursday of this week. Bids are soon to be called for on steel for a club house for the Order of Red Men, Buffalo, taking 100 tons; also for a new city hall at Niagara Falls, N. Y., requiring about 300 tons. The Charles F. Ernst & Sons Company, Buffalo, was low bidder for 200 tons for the Polish Union's club house, Buffalo, and the Onondaga Steel Company, Syracuse, has the contract for steel for the rebuilding of the Grand Opera House in that city.

Old Material.—While shipments on all contracts are moving freely, few new sales have been made. The local demand for old carwheels continues active, however, with some business in heavy melting steel, turnings and borings. No change in prices is reported, although dealers are inclined to hold a little more stiffly to the maximum than a few days ago. We quote dealers' selling prices as follows, per gross ton, f.o.b. Buffalo:

Heavy melting steel	$10.25 to $10.50
Low phosphorus steel	14.00 to 14.50
Boiler plate sheared	11.50 to 12.00
No. 1 railroad wrought scrap	10.00 to 10.50
No. 1 railroad and machinery cast	10.50 to 11.00
Old steel axles	12.50 to 13.00
Old iron axles	19.50 to 20.00
Old carwheels	10.75 to 11.25
Railroad malleable	9.25 to 9.75
Machine shop turnings	5.50 to 6.00
Heavy axle turnings	7.50 to 8.25
Clean cast borings	6.00 to 6.50
Old iron rails	13.00 to 13.75
Locomotive grate bars	8.50 to 9.00
Stove plate (net ton)	9.00 to 9.75
Wrought pipe	7.50 to 8.00
Bundled sheet scrap	6.25 to 6.50
No. 1 busheling scrap	8.25 to 8.75
No. 2 busheling scrap	5.75 to 6.25
Bundled tin scrap	10.50

Cincinnati

CINCINNATI, OHIO, August 5, 1914.—(*By Wire.*)

Pig Iron.—The principal matter of interest in this market is the withdrawal of all quotations on ferromanganese. It is understood that the steel mills have a supply contracted for that will last them through the year, but on account of the war it is problematical whether deliveries can be made on these contracts. There is very little business in foundry iron in this territory. Jobbing foundries that make a specialty of machine-tool castings expect a temporary curtailment in business, and few of them are willing to forecast the future to the extent of piling up any larger supplies of iron. Manufacturers of stoves and ranges are probably the best customers now. There is much competitive bidding for 400 tons of Southern iron and 700 tons of Northern iron on a general price requisition received this week from a central Indiana stove maker. A limited number of Southern brands of No. 2 foundry can be bought at $10, Birmingham basis, for this year's shipment, but the majority of makers are asking 25c. a ton higher. Southern Ohio furnaces are not cutting prices to meet other competition, as far as is known, but there is yet some resale iron in that district. Ohio silvery irons are somewhat firmer, although little business is reported. Based on freight rates of $3.25 from Birmingham and $1.20 from Ironton, we quote, f.o.b. Cincinnati, as follows:

Southern coke, No. 1 f'dry and 1 soft	$13.75 to $14.25
Southern coke, No. 2 f'dry and 2 soft	13.25 to 13.75
Southern coke, No. 3 foundry	12.75 to 13.25
Southern No. 4 foundry	12.25 to 12.75
Southern gray forge	11.75 to 12.25
Ohio silvery, 8 per cent. silicon	17.20 to 17.70
Southern Ohio coke, No. 1	15.45 to 15.95
Southern Ohio coke, No. 2	14.45 to 14.95
Southern Ohio coke, No. 3	14.20 to 14.45
Southern Ohio malleable Bessemer	14.45 to 14.95
Basic, Northern	14.45 to 14.95
Lake Superior charcoal	15.25 to 17.25
Standard Southern carwheel	27.25 to 27.75

(*By Mail*)

Coke.—Local sales agencies report that advices from producers indicate some uneasiness regarding the labor proposition, fearing a general exodus of their foreign laborers. A few contracts for foundry coke are reported, but they are principally from customers in other consuming districts; the foundries here are only buying what they actually need, the majority of them being well fixed for the remainder of the year. We quote Connellsville furnace coke at $1.70 to $1.90 per net ton at oven, with Wise County and Pocahontas operators asking from 10c. to 20c. a ton higher. Foundry coke in all three districts is quotable around $2.25 to $2.50 per net ton at oven.

Finished Material.—There has been a general stiffening of market prices. Steel bars and small structural shapes are firm at 1.15c., Pittsburgh, and No. 28 black sheets are now quoted by a nearby mill on a basis of 1.85c., Pittsburgh, and galvanized sheets 2.85c., mak-

ing the Cincinnati price 2c. and 3c. respectively. These quotations are only for shipment in August. Some improvement is noted with the local warehouses, with prices unchanged around 1.75c. to 1.80c. on steel bars and structural material. Hoops and bands are in better demand, and it is authoritatively reported that prices have advanced. It is the general opinion that the domestic market will be benefited by the cutting off of European competition, although up to the present time this competition has made no inroads on regular business in the Central West.

Old Material.—This week reports from all sources are not conflicting as to market conditions. Very little scrap is being bought or sold. Prices are uncertain. The minimum figures given below represent what buyers are willing to pay for delivery in their yards, southern Ohio and Cincinnati, and the maximum quotations are dealers' prices, f.o.b at yards:

Per Gross Ton

Bundled sheet scrap	$6.75 to	$7.25
Old iron rails	11.75 to	12.25
Relaying rails, 50 lb. and up	19.75 to	20.25
Rerolling steel rails	10.75 to	11.25
Melting steel rails	9.25 to	9.75
Old carwheels	10.25 to	10.75

Per Net Ton

No. 1 railroad wrought	$8.75 to	$9.25
Cast borings	4.50 to	5.00
Steel turnings	4.50 to	5.25
Railroad cast scrap	9.25 to	9.75
No. 1 machinery cast scrap	10.25 to	11.25
Burnt scrap	6.00 to	6.75
Old iron axles	15.50 to	16.00
Locomotive tires (smooth inside)	9.75 to	10.25
Pipes and flues	6.25 to	6.75
Malleable and steel scrap	7.25 to	7.75
Railroad tank and steel scrap	5.25 to	5.75

Cleveland

CLEVELAND, OHIO, August 4, 1914.

Iron Ore.—Shipments in July were 5,784,514 tons as compared with 5,502,367 tons in June, an increase of 282,147 tons. The July figures show a falling off of 2,419,902 tons as compared with July, 1913. The movement to August 1 amounted to 15,408,630 tons as compared with 24,329,460 tons to August 1, 1913, a decrease of 8,920,830 tons. Ore sellers see a possibility that ore shipments to Eastern consumers from Spain and Sweden will be cut off because of the European war. If boats are available for ore shipments freight rates may be raised to an almost prohibitory point, so that some of the Eastern consumers who have been depending almost wholly on foreign ore may look to the Lake Superior mines for their supply. We quote prices as follows: Old range Bessemer, $3.75; Mesaba Bessemer, $3.50; old range non-Bessemer, $3; Mesaba non-Bessemer, $2.85.

Pig Iron.—There is little activity. Some small sales of foundry iron are being made, but no round lot inquiries are pending for any grade. Some of the pig-iron salesmen are devoting their entire attention to the ferromanganese situation. Several days ago some consumers were able to place contracts, but because of the war developments all prices have since been withdrawn and a number of consumers who are anxious to protect themselves with contracts are unable to do so. Most consumers are said to have a 60 to 90 day supply on hand. There is little activity in Southern iron. We note the sale of 200 tons of No. 4 in central Ohio at $9.50, Birmingham, and 150 tons of Southern charcoal at $24 for shipment to Wheeling. Prices on Southern iron are being well maintained here at $10.25, Birmingham, for No. 2, sellers claiming that no iron that is strictly No. 2 foundry grade can be bought at a lower price. The foundry melt in this territory apparently shows no change. We quote, delivered Cleveland, as follows:

Bessemer	$14.90
Basic	$13.75 to 13.90
Northern No. 2 foundry	13.75
Southern No. 2 foundry	14.60
Gray forge	13.25
Jackson Co. silvery, 8 per cent. silicon	17.55
Standard low phosphorus, Valley furnace	20.25

Coke.—The market is dull. A few contracts for foundry coke covering a year's requirements are reported at prices that have prevailed recently. We quote standard Connellsville foundry coke for contract at $2.35 to $2.50 per net ton at oven. Furnace coke is quoted at $1.70 to $1.75 for prompt shipment.

Finished Iron and Steel.—The only effect of the European war so far apparent on finished lines in this territory is a disinclination of the mills to load up further with contracts for future delivery at current prices. The volume of business has not been affected. Specifications are coming out in good shape and considerable business is being figured on, but not a great deal is being placed. The general feeling in most lines of manufacture is that the war will have a temporary harmful effect on business, but that eventually it will prove beneficial to American manufacturers. Eastern mills see in the freight rate decision an advantage for them in making shipments to this territory, as their differential will be reduced owing to the fact that an advance in Pittsburgh rates has been allowed, but no advance can be made on shipments from Eastern points. Finished steel prices are firm at the 1.15c., Pittsburgh, basis, with the exception of shading on plates by some of the small mills. The demand for structural material is more active than for some time, being mostly for small lots. The inquiry for the Chesapeake & Ohio bridge at Sciotoville, Ohio, 17,000 tons, has come out. The McMyler Interstate Company has taken 150 tons for a building for the Cleveland Car Roofing Company. Morrow Bros., Baltimore, have taken a general contract for the Ford building, Cleveland, requiring 550 tons of reinforcing bars. Iron bars are in light demand, with the price unchanged at 1.20c., Cleveland, for local delivery. Sheet prices are stiffening. Some of the Ohio mills that have advanced their price on black sheets to 1.85c. for No. 28 are getting orders at that price. Some of the mills have advanced prices on blue annealed to 1.45c. Galvanized sheets are quoted at 2.80c. to 2.85c. for No. 28. Warehouse prices are 1.80c. for steel bars and 1.90c. for plates and structural material.

Bolts, Nuts and Rivets.—Not much new inquiry for bolts is coming out and specifications are rather light. Prices are being fairly well maintained. Rivets are quoted at 1.50c. for structural and 1.60c. for boiler, for carload lots, with a tendency to weakness on the latter. We quote discounts as follows: Common carriage bolts, ⅜ x 6 in., smaller or shorter, rolled thread, 80 and 20 per cent.; cut thread, 80 and 15 per cent.; larger or longer, 75 and 15 per cent.; machine bolts with h. p. nuts, ⅜ x 4 in., smaller or shorter, rolled thread, 80 and 25 per cent.; cut thread, 80 and 20 per cent.; larger or longer, 80 per cent.; coach and lag screws, 80 and 25 per cent.; square h. p. nuts, blank or tapped, $6.30 off; hexagon h. p. nuts, blank or tapped, $7.20 off; c. p. c. and t. square nuts, blank or tapped, $6 off; hexagon, ⅝ in. and larger, $7.20 off; 9/16 in. and smaller, $7.80 off; semi-finished hexagon nuts, ⅝ in. and larger, 85, 10 and 5 per cent.; 9/16 in. and smaller, 85, 10, 10 and 5 per cent.

Old Material.—There is little activity. Mills are not anxious to buy for future delivery and some are offering lower prices for round lots than for small tonnages. Prices show a tendency to weakness, although most quotations are unchanged. Youngstown mills have reduced the price on heavy melting steel 25c. a ton, now offering $11.50. It is stated that considerable scrap can be bought at that price. The Otis Steel Company is holding up shipments. The embargo placed against scrap of the Brier Hill Steel Company has been lifted and the LaBelle Iron Works is again taking scrap. Iron car axles have again declined $1 a ton in the local market. We quote, f.o.b. Cleveland, as follows:

Per Gross Ton

Old steel rails, rerolling	$11.50 to	$12.00
Old iron rails	13.00 to	13.50
Steel car axles	15.00 to	15.25
Heavy melting steel	10.00 to	10.50
Old carwheels	11.25 to	11.50
Relaying rails, 50 lb. and over	23.00 to	25.00
Agricultural malleable	8.50 to	9.00
Railroad malleable	10.25 to	10.75
Light bundled sheet scrap	7.50 to	8.00

Per Net Ton

Iron car axles	$17.00 to	$17.25
Cast borings	5.75 to	6.00
Iron and steel turnings and drillings	5.25 to	5.50
Steel axle turnings	6.75 to	7.25
No. 1 busheling, new	8.25 to	8.50
No. 1 busheling, old		8.25
No. 1 railroad wrought	9.50 to	10.00
No. 1 cast	10.50 to	10.75
Stove plate	7.50 to	8.00

Birmingham

BIRMINGHAM, ALA., August 3, 1914.

Pig Iron.—As far as Southern consumers are concerned, it seems an assured fact that the $10 pig iron has disappeared, although some furnaces are reported to be still meeting competition in some sections of the country by selling on a $10 basis. The price is pretty well pegged at $10.25, however, on the majority of the sales being made for farther forward delivery. Orders for a considerable tonnage have been closed recently, but it appears that a great many large consumers are still continuing their purchases on a hand-to-mouth basis, and this business is totaling quite a nice aggregate, week by week. It is too early at this writing for any furnace operators here to venture an opinion as to the effect the European war will have on Southern pig iron. July showed a reduction in stocks of foundry iron on Southern furnace yards, with perhaps one exception. The following quotations may be taken as the current market at Birmingham furnaces:

No. 1 foundry and soft	$10.50 to $11.00
No. 2 foundry and soft	10.00 to 10.50
No. 3 foundry	9.50 to 10.00
No. 4 foundry	9.25 to 9.75
Gray forge	9.00 to 9.50
Basic	10.00 to 10.25
Charcoal	23.50 to 24.00

Cast-Iron Pipe.—One plant in the district making water pipe is reported sold up to such extent that a night shift has been put on to add to the production. One plant in this district has been operating both day and night turn for more than a year. Some considerable municipal tonnages are pending, with good prospects of closing if no change in the financial situation develops soon to make money tighter. The principal demand of late has come from municipalities that have good prospects for placing improvement bonds and this has helped the local pipe foundries wonderfully in keeping their product moving. Cast-iron soil pipe has approached the dull season, with a perceptible reduction in selling prices. Quotations for water pipe remain at $20.50 for 4 in., with 6 in. and upward at $18.50, per net ton, f. o. b. foundries here. Gas pipe takes the usual $1 differential higher.

Coal and Coke.—While the coal mines are going through the usual mid-summer dulness, yet some good contracts are being placed. The mines in Alabama are making a record output, being at about the rate of 78,000,000 tons per annum; yet if every mine were running full time, the production could be materially increased from the territory now being worked. Steam coal prices are very low, while the domestic demand is enabling the producer to obtain slightly more for that trade. Some good coke contracts have been made this week, both for furnace and foundry grades. Quotations remain, per net ton at oven as follows: Furnace coke, $2.75 to $2.90, foundry coke, $3.25 to $3.50, with some special brands bringing $3.75 on contracts.

Old Material.—The scrap iron market remains lifeless, with quotations unchanged, f. o. b. dealers' yards here, per gross ton, as follows:

Old iron axles	$14.50 to $15.00
Old steel axles	14.50 to 15.00
Old iron rails	13.00 to 13.50
No. 1 railroad wrought	10.00 to 11.00
No. 2 railroad wrought	8.50 to 9.00
No. 1 country wrought	9.00 to 10.00
No. 2 country wrought	8.00 to 9.00
No. 1 machinery cast	9.50 to 10.00
No. 1 steel scrap	8.00 to 8.50
Tram carwheels	9.50 to 10.00
Standard carwheels	10.50 to 11.00
Stove plate	8.00 to 8.50

St. Louis

ST. LOUIS, MO., August 3, 1914.

The European war has developed some hesitancy for the moment, but general conditions are good and prices are firm.

Pig Iron.—Sales the past week have been of small lots for the most part, with a few transactions running to 500 tons, chiefly southern iron. The aggregate has been better than for some time and there is increasing evidence of further business shortly. The orders placed are for delivery through the remainder of the year, with none reaching beyond the last quarter. Foundrymen generally report the outlook for fall as excellent, with actual improvement already noted in a number of instances. No large inquiries are pending, but some are understood to be about to issue, particularly if the war scare does not tend to further hesitancy than already noted. Consumers of ferromanganese are showing some anxiety regarding supplies.

Coke.—The chief interest in the coke market this week was an inquiry for 5000 tons of smelter grade for delivery over nine months. It is being sharply competed for. The 48-hr. furnace coke market shows but little life aside from this. In 72-hr. best selected Connellsville, the business has been in small lots for immediate shipment at prices slightly above the established market at oven. By-product coke, St. Louis delivery, is quotable at $5.10 to $5.20 per net ton.

Finished Iron and Steel.—Business has been quiet. The advance in prices recently made by the principal interest has been followed by all others and for by far the most part the action has been taken without any notably serious criticism by consumers. The 3000-ton requirement of the East Kansas bridge at Kansas City, Mo., has gone to the Kansas City Structural Steel Company. The 17,000-ton terminal requirement is still hanging fire. Bars are in better demand and the price is firmer. Nothing is doing in rails, either light or standard, but frog and switch concerns are quite active, with their work chiefly on small jobs. Track fastenings are fair.

Old Material.—Scrap is very firm at the prices noted below and the belief is that business will be much better. The advance permitted in railroad rates has had a stimulating effect. The only list out is one of 700 tons from a local industry. The large Missouri, Kansas & Texas list closed last week brought advanced prices over the preceding list. We quote dealers' prices, f.o.b. St. Louis, as follows:

Per Gross Ton

Old iron rails	$11.00 to $11.25
Old steel rails rerolling	11.25 to 11.50
Old steel rails, less than 3 ft.	10.50 to 10.75
Relaying rails, standard section, subject to inspection	21.00 to 23.00
Old carwheels	11.00 to 11.25
No. 1 railroad heavy melting steel scrap	10.50 to 10.75
Shoveling steel	8.00 to 8.50
Frogs, switches and guards cut apart	10.50 to 10.75
Bundled sheet scrap	5.00 to 5.25

Per Net Ton

Iron angle bars	$10.00 to $10.50
Steel angle bars	9.25 to 9.50
Iron car axles	16.75 to 17.25
Steel car axles	11.75 to 12.25
Wrought arch bars and transoms	11.00 to 11.50
No. 1 railroad wrought	8.00 to 8.25
No. 2 railroad wrought	8.00 to 8.25
Railroad springs	9.25 to 9.50
Steel couplers and knuckles	9.25 to 9.50
Locomotive tires, 42 in. and over, smooth	8.75 to 9.25
No. 1 dealers' forge	7.75 to 8.00
Mixed borings	4.00 to 4.25
No. 1 busheling	7.25 to 7.50
No. 1 boilers, cut to sheets and rings	5.75 to 6.25
No. 1 cast scrap	9.50 to 10.00
Stove plate and light cast scrap	8.25 to 8.75
Railroad malleable	8.00 to 8.25
Agricultural malleable	7.50 to 8.00
Pipes and flues	5.75 to 6.25
Railroad sheet and tank scrap	5.75 to 6.00
Railroad grate bars	7.25 to 7.50
Machine shop turnings	5.00 to 5.25

San Francisco

SAN FRANCISCO, CAL., July 28, 1914.

General business in steel products has been quiet throughout the month. The consuming demand shows the usual summer curtailment, and orders for special requirements have, on the whole, been rather lighter than for the previous month. The greater firmness of prices in some lines at producing points has had no evident stimulating effect in this vicinity, as the trade is not convinced that the upward movement will continue. The local trade is greatly interested in the announcement that the Panama Canal will open next month. It is known that orders aggregating a fairly large tonnage have been held back awaiting this change in traffic conditions. A number of merchants feel that conditions are as favorable to buyers as they are likely to be, and are ready to put in supplies for some months ahead as soon as the new rates are established. So far,

however, they have received no notice of new rates via Panama, and some time may be required to put shipping conditions on a settled basis.

Bars.—Reinforcing material is moving fairly well, though most of the business is of a small nature. Country bridges have been a factor of some importance in current business. Competition in this line is keen between local mills and importers, and prices show considerable irregularity, according to amount, location and other conditions. The jobbing trade in soft steel bars is light, and few special inquiries of importance are appearing. Merchants are receiving small foreign shipments at frequent intervals and are filling in short sizes principally from the local stock of the Steel Products Company. Eastern bars for rail shipment are $1 per ton higher, at 1.95c. here, but may still be purchased for water shipment at 1.65c., German bars remaining at about 1.30 to 1.35c. c. i. f.

Structural Material.—Local fabricators report business extremely quiet, with little in sight except small apartment-house jobs, several of which have been placed. Eastern fabricators have taken a few country bridges, but there is little now in the market that interests them. The Ralston Iron Works has a small hotel job at Lodi, Cal., the Brode Iron Works has a small apartment house at Sixteenth and Howard streets, this city, and the Schrader Iron Works has a tank house for the Allec cleaning plant. Plans are under way for the reconstruction of the Fourth street bridge at Channel street. Figures are being taken for a class A residence on Lake street, and plans will soon be ready for a factory building and garage for the Ghirardelli chocolate works; a building requiring 200 tons at Eddy and Jones streets; a new building for the polytechnic high school; and a pathological building at the city hospital. Plain domestic shapes may still be had for water shipment at about 1.70c., and foreign at 1.55 to 1.60c. c. i. f.

Rails.—Recent orders for heavy rails have been of no importance, and there is nothing to indicate better buying on the part of local interurban lines in the near future. Light rails are also quiet, though scattered orders from mines and industrial plants are fairly numerous. German 8-lb. rails can be brought in at 1.40c., and are getting a substantial proportion of the business on this weight.

Plates.—Current business remains quiet, the local jobbing demand being light, while the placing of orders on some of the largest inquiries has been delayed. The outlook, however, is good, in view of the steady expansion of storage and refining capacity by leading oil interests. The Modesto Irrigation District, Modesto, Cal., is taking figures on a large steel siphon. The Lacey Mfg. Company, Los Angeles, has a contract for several tanks at El Segundo; and the American Steel Pipe & Tank Company, Los Angeles, has a contract for penstocks for the Escondido Mutual Water Company. The Standard Oil Company is preparing for further additions to its Richmond refinery. Foreign material receives little attention here, but may be landed at about 1.55c., against 1.70c. for American plates, water shipment.

Sheets.—The slight increase in buying formerly noted was of short duration, and both merchants and manufacturers have returned to their waiting policy, relying on prompt shipments to meet current needs. While several leading mills decline to book contracts for extended delivery, buyers show no disposition to place such contracts. There is little life in the jobbing trade, but some improvement is expected next month. No. 28 black sheets remain at 1.80 to 1.85c., Pittsburgh; galvanized at 2.75 to 2.80c.; and No. 10 blue annealed at 1.35c.

Standard Pipe.—In some quarters a slight improvement is noted, but the month as a whole has been dull, distributive business everywhere being below normal. Merchants' stocks are low, and a little more buying is expected from now on, in preparation for the usual increase in consuming lines in September. A slight stiffening in local resale prices, which have been demoralized for some time, is taken as a favorable indication.

Cast-Iron Pipe.—Several municipal orders are coming out this week, Los Angeles asking bids on 650 tons of 6 and 10 in.; Santa Cruz for about two carloads; and Sacramento for about six cars of 6, 8 and 10 in. A few scattered orders for gas pipe have also been placed. This city will be in the market for a large tonnage as soon as the Spring Valley purchase is settled; but the prospects for a settlement are rather uncertain. The market shows a little healthier tone, with process slightly firmer, though not quotably higher. Local prices are quoted at $32 per net ton for 6-in. and over; $34 for 4-in.; and $1 extra for gas pipe.

Pig Iron.—The foundry business remains extremely dull, the principal buyers being still well supplied from former purchases. Small melters are buying on a hand-to-mouth basis, and frequent small arrivals prevent any great decrease in supplies. Prices for prompt delivery from warehouse are too irregular to be quoted. Middlesbrough iron for fall delivery is still held at $19.50 to $20 per gross ton, but receives practically no attention.

Coke.—There is only a limited demand from the foundries and local yards are well supplied, though values are steadily maintained. German Syndicate coke is quoted at the yards at $13 per net ton, while the price for current loading is a little easier at $9.50 to $10 per gross ton.

Old Material.—Cast-iron scrap is in limited demand at about $15 per net ton, but other materials are dull, with irregular prices. Dealers still hold steel melting scrap at about $10 to $11 per gross ton, but melters are buying practically nothing aside from a few odd lots picked up at various prices. Wrought scrap is almost entirely neglected.

New York

NEW YORK, August 5, 1914.

Pig Iron.—Buyers have been very scarce in the past week and foundries are evidently giving little thought to the market. A large pump interest which was in the market recently for a round lot for its Buffalo plant has placed some of the business in that city. In New Jersey one interest which closed for part of its inquiry for 1000 tons recently is now taking prices on 500 tons of what is practically a malleable grade. Most of the Eastern business done by Buffalo furnaces of late, and it has not been large, has been on a basis somewhat under $13, but there is not enough inquiry going to call out such concessions as were common three weeks ago. We quote Northern iron for tidewater delivery as follows: No. 1 foundry, $14.75 to $15; No. 2 X, $14.35 to $14.60; No. 2 plain, $14.20 to $14.45. Southern iron is quoted at $14.75 to $15 for No. 1 and $14.25 to $14.50 for No. 2.

Ferroalloys.—Quotations on 80 per cent. ferromanganese for both the English and German product have been entirely withdrawn owing to the European war. It is reported that shipments from England and Germany are temporarily abandoned. While most of the larger steel companies are reported to be fairly well stocked it is said that there are many anxious inquiries from various sources for not only immediate shipments of the alloy but for information as to the future supply. Even to those companies which have contracts for the remainder of the year, it is a question whether deliveries can be made and it is likely that stocks in dealers' hands are not large. Some consumers are reported to have already offered a considerable advance in price for the alloy over the prevailing quotations of $38, seaboard, for the English, and $37, seaboard, for the German, which existed before hostilities began. Owing to the conditions prevailing, there is no market and the future depends entirely upon the course of events. Quotations for ferrosilicon are reported to be $71 to $73, Pittsburgh, depending on the quantity desired.

Cast-Iron Pipe.—The Department of Water Supply, Gas and Electricity, New York City, will open bids August 5 on 100 tons, principally 20-in., for the Borough of Richmond, and 800 tons, principally 12 and 20

in., for the Bronx, both contractors' jobs. Worcester, Mass., will open bids August 10 on about 650 tons, nearly all 20-in. These are about the only public lettings of importance in this vicinity in the near future. Competition continues keen on such business as is now coming out from private buyers. Carload lots of 6-in. are still quoted at $20.50 to $21, per net ton, tidewater.

Old Material.—Conditions are becoming worse instead of better. Dealers having contracts to fill are finding increasing difficulty in inducing consumers to accept shipments. The utmost caution is being taken in making sales of even small quantities because of financial uncertainties. The trade is thus hampered by lack of interest among large buyers and fear of uncertainty of payment by small consumers. It is likely that buying on railroad lists now coming out will show few dealers desirous of taking material at anything like recent market prices. Some dealers will submit no bids whatever. The situation is such that quotations are difficult to make, the following, which are per gross ton, New York, being wholly nominal:

Old girder and T rails for melting	$7.75 to $8.25
Heavy melting steel scrap	7.75 to 8.25
Relaying rails	20.50 to 21.00
Rerolling rails	10.00 to 10.50
Iron car axles	17.00 to 17.50
Steel car axles	11.50 to 12.00
No. 1 railroad wrought	10.00 to 10.50
Wrought iron track scrap	8.75 to 9.25
No. 1 yard wrought, long	8.25 to 8.75
No. 1 yard wrought, short	7.75 to 8.25
Light iron	3.25 to 3.50
Cast borings	5.50 to 5.75
Wrought turnings	5.25 to 5.50
Wrought pipe	7.25 to 7.75
Carwheels	9.25 to 9.75
No. 1 heavy cast broken up	10.00 to 10.50
Stove plate	7.50 to 8.00
Locomotive grate bars	6.00 to 6.25
Malleable cast	7.25 to 7.75

Finished Iron and Steel.—With the present unsettlement of the financial and credit situation the market is marking time. In structural lines the result has been to hold up any large projects depending on extensive loans, and even in smaller undertakings there is a disposition to await developments. For work already financed contracts are proceeding in the usual way, but they are not numerous. In other lines, such as bars and plates, the report is that in the last day or two orders have been limited to actual necessity and that, while new business and specifications on contracts are fair, the disposition is to wait for more settled conditions. Any export business is necessarily held up, but no cancellations are reported. Prices in general remain practically the same as obtained in the last week in July with no tendency to stiffen. It is a fact that the 1.15c. base price for plates is being shaded in various quarters, some Eastern prices figuring back to less than 1.10c. Pittsburgh. The freight rate decision is regarded as more or less disappointing in this territory and no real improvement in railroad buying is looked for as an immediate consequence. Serious consideration of the decision, however, has been temporarily displaced by war news. Recent structural awards are the following: 5000 tons for a power house for the Philadelphia Electric Company, Philadelphia, to Levering & Garrigues; 1800 tons for the two Paterno apartments, one at Eighty-fourth street and Broadway and the other at West End avenue and Broadway, to the American Bridge Company; 700 tons for the Allston Armory at Boston, to the New England Construction Company; 600 tons for the Horatio apartment at Fifty-fourth street and Park avenue, to the Belmont Iron Works; 2000 tons for the three Bing & Bing apartments, to the Passaic Steel Company; 300 tons for the new telephone building at Newark, N. J., to the Hay Foundry & Iron Works; 400 tons for a Pennsylvania Railroad bridge at Baltimore, to the Pennsylvania Steel Company, and 250 tons for a residence at Tuxedo Park, to the Lackawanna Bridge Company. The Pennsylvania Railroad has awarded contracts for about 500 tons of bridges to the McClintic-Marshall Company, the Pennsylvania Steel Company and the Belmont Iron Works. New projects, on which bids are being taken, embrace 800 tons for the Pictorial Review building on West Thirty-ninth street; 1200 tons for the Wheelock apartment in West Thirty-third street; 650 tons for an eight-story apartment at 193d street and Webster avenue; 600 tons for the Polstien apartment, and 300 tons for several bridges for the Erie Railroad. New business in railroad cars has also been temporarily checked so far as financing is concerned and the market is temporarily at a standstill. It is estimated that in July about 6800 freight cars were ordered, which is the smallest monthly total for the year. To August 1 the total was 70,800 cars, which is at the rate of 121,000 per year. This is to be compared with 235,000 in 1912 and 147,000 in 1913. The Erie Railroad has placed an order for 600 coal cars, equally divided between the American Car & Foundry Company, the Pressed Steel Car Company and the Standard Steel Car Company. We quote mill shipments of steel bars, shapes and plates at 1.10c. to 1.15c., Pittsburgh, or 1.26c. to 1.31c., New York. We quote iron bars at 1.20c. to 1.25c., New York. For lots from store we quote iron and steel bars at 1.80c. to 1.85c., New York, and plates and structural material at 1.85c. to 1.90c.

Boston

BOSTON, MASS., August 4, 1914.

Old Material.—The market feels the general bewilderment resulting from the unexpected European war and it will be some time, probably, before an adjustment of opinion to the new conditions is accomplished. Sales have been few, but the war probably made no difference in the volume of transactions. The quotations given below, which are largely nominal, are based on prices offered by the large dealers to the producers and to the small dealers and collectors, per gross ton, carload lots, f.o.b. Boston and other New England points which take Boston rates from eastern Pennsylvania points. In comparison with Philadelphia prices the differential for freight of $2.30 a ton is included. Mill prices are approximately 50c. a ton more than dealers' prices:

Heavy melting steel	$8.25 to $8.50
Low phosphorus steel	13.75 to 14.75
Old steel axles	13.25 to 13.75
Old iron axles	21.25 to 21.75
Mixed shafting	12.00 to 12.25
No. 1 wrought and soft steel	9.00 to 9.25
Skeleton (bundled)	5.50 to 5.75
Wrought-iron pipe	7.50 to 7.75
Cotton ties (bundled)	6.00 to 6.25
No. 2 light	3.75 to 4.25
Wrought turnings	5.00 to 5.50
Cast borings	5.25 to 5.75
Machinery, cast	11.25 to 11.50
Malleable	8.00 to 8.25
Stove plate	7.75 to 8.00
Grate bars	5.25 to 5.50
Cast-iron carwheels	11.00 to 11.25

German Situation Very Bad

Lower Prices Follow Failure to Effect Combinations—Reduced Pig-Iron Consumption

BERLIN, July 24, 1914.

The export price for bars has dropped to 79 s. ($19.22) per ton f.o.b. Antwerp. This corresponds nearly to 71½ marks at the mills in southwestern Germany, and this is cited at the very beginning of this report to show what is happening to this branch of the iron and steel market. Domestic prices of 96 to 98 marks ($22.84 to $23.32) early in May have dropped to 92 to 94 marks ($21.89 to $22.37) and specifications at these prices are dependent upon all manner of concessions, rebates, etc. The position of the bar market has suffered also from the renewed weakness of the market in Belgium, where attempts to form a bar-iron syndicate have failed utterly.

The uncertainty attendant upon the negotiations to syndicalize the B products continues and is in large measure responsible for the fact that the situation is steadily growing worse. Further conferences in the bar-iron and heavy plate groups are set for the end of the present month, but it is questionable whether these sessions will effect anything. About all that is looked for is a postponement of the negotiations to the end of September. It has been suggested that temporary price agreements might be reached to cover the interim, but the majority of those interested appear to have no desire for such an agreement and to promise themselves

nothing from it. The demands of the leading concerns as conditions precedent to the formation of the desired syndicate are such as to cause some doubt as to their real desire to reach an agreement.

Objection by a number of works to lumping domestic and export trade under one category appears justified. The open-hearth works, for instance, point out that such an agreement would be extremely disadvantageous to them, since their export business is negligible. The proposed plan would mean that they must submit to price reductions for the support of the export trade with no opportunity to benefit from it. The important Bessemer works, however, insist upon the original plan.

A quite new tangle in the negotiations has also been presented by some of the most eager friends of syndicalization. They point out that settled conditions in the iron and steel industry can only be hoped for when, together with the B products, the syndicate of the A products also is assured for a long term. If the makers of B products permit themselves to be put off at this time with a syndicate for merely these products, they face in two years, with the expiration of the Stahlwerksverband agreement, another period of uncertainty as to the renewal of that organization. These individuals desire that the formation of a B products syndicate shall be accompanied by a prolongation of the Stahlwerksverband.

The tin plate group was to have conferred again at the end of the present week, but the conference has been indefinitely adjourned. The chief reason was the fact that a basis for the establishment of quotas had not been figured out. A number of sessions in the wire group are scheduled for the next few days, and the chances of an organization of this branch of the industry appear fair.

The Pig Iron Association's shipments for June were highly unsatisfactory, the percentage, 70.3, being not only the lowest of this year but the lowest since the existence of the association. Despite reduced prices for the current year, specifications do not meet anticipations. The English competition is making itself severely felt, especially in the coast districts, and export prices are so far below domestic rates that consumers are complaining of an undue favoring of foreign consumers.

The business in semi-finished products has not changed greatly. Some competition is coming from the open-hearth works, which are offering ingots at 78 to 80 marks ($18.56 to $19.04), against the 87.50 marks ($20.81) demanded by the Stahlwerksverband for the same quality. The result is a demand from consumers that the Stahlwerksverband shall reduce the figures for semi-finished steel. There is little disposition to comply with this wish, but a slight increase in the export bonus, now 15 marks ($3.57) per ton, may be made. Export prices for semi-finished material have dropped from 1 to 2 marks (23c to 47c.) per ton under English competition. Billets are from 72 to 74 marks ($17.13 to $17.61). The only really satisfactory conditions are in railroad material, where the works are running on full time. Business in shapes is quiet.

Upper Silesia reports extreme dullness. Particularly is this true in the bar-iron market. The continued depression in the building world is an unfavorable factor, and an improvement is hardly to be expected this year. No change is noted in the pig-iron market. The production still exceeds the demand, and supplies are piling up. The older blast furnaces are being blown out. Semi-finished material and bars, beams, tubes and plates are unsatisfactory. Here, however, as elsewhere, the conditions in railroad material are fair.

The Electric Steel Company of Indiana has nearly completed its new plant at Indianapolis and expects to be in operation in about 30 days. All foundry equipment has been purchased and a Buckman electric furnace is being installed. While rated at 3 tons it will have a capacity in excess of this estimate. The company is incorporated in Indiana at $100,000. The officers and directors are: H. McK. Landon, president; P. J. McNamara, vice-president; J. M. Ryan, general manager; W. N. Voliva, secretary and treasurer; T. A. Lavelle, Hugh M. Love and H. H. Buckman.

British Trade Chaotic

All Ocean Shipments are Delayed or Canceled—No Quotations Available at Present

(*By Cable*)

LONDON, ENGLAND, August 5, 1914.

Chaos rules here. All ocean shipments have been delayed or canceled. It is possible that the suspension of deliveries of French, German and Belgian steel may stimulate prices of British steel when credit machinery, which is now stopped, and when banking facilities, now unavailable, are renewed. The prolongation of the bank holiday and the absence of business make it impossible to feel the pulse of the market. Quotations for material are unobtainable at present. No insurance can be secured on freights.

Pig-Iron Prices Artificial and Many Furnaces Idle—Other Products Dull and Prices Low

(*By Mail*)

LONDON, July 24, 1914.

The pig-iron market here is quiet, the further recession in buying having been caused to a certain extent by the Glasgow fair holidays, which have been in full blast for a week now but which end tomorrow. In consequence of this, Scotch buying of Cleveland iron has been stopped and there has been very little metal shipped from the Tees to Grangemouth. The Scottish founders are the best consumers of Cleveland metal, and any interruption of buying from this direction is regarded with anxiety. As it is, the market has stood the temporary suspension of business from this quarter very well, and the stocks have not increased as much as might have been expected. On the whole the outlook in the Cleveland district is not at all good. Prices are artificially maintained, and output is being curtailed by arrangement, hence the position cannot be regarded as at all satisfactory. Some day something may happen to bring about the restoration of normal conditions, but it seems as if for the present the furnace owners and the fuel men were quite content to throttle the trade of the district. Apart from Cleveland there is a very slack tone everywhere, and a lot of plants are idle. In the Midlands a number of furnaces are cold, and there is not the least disposition to put fresh stacks into operation at present. The reports from America have taken some of the little remaining courage out of the market, because pig iron there is represented as being weak. Certainly Alabama iron is being offered to Europe though as far as inquiries made here are concerned, the prices asked are rather absurdly high. People in Europe will not pay prices approaching Cleveland iron prices for Alabama metal; they want it at shillings less hence they see no inducement at present to take up quantities.

In semi-finished steel the tone is far from firm, but prices do not come down. The Welsh makers of sheet bars are holding out for their official price of 91s. 3d. ($22.20), but it is possible to buy at 90s. ($21.90). Outside of the Welsh district—in Monmouthshire—the steel makers are cheaper sellers however, and have made sales at 86s. 3d. ($20.99) to works in the neighborhood. To other parts such as the Birmingham and Wolverhampton districts they will sell on still more advantageous terms to the buyers, thus doing a good deal to keep out Continental material. The French are still needy sellers and a line of 15,000 tons of sheet bars has been sold this week to Wales, August to March delivery, at about 74s. ($18) f.o.b. Finished steel is idle, but prices are so low that any further material reduction should be impossible. Buyers nevertheless hold back.

The Collingwood Shipbuilding Company, Collingwood, Ont., has received an order from the Dominion Government for the construction of a steam hopper barge to cost $160,000. It will be constructed of steel and will be propelled by engines of 800 h.p.

Metal Market

NEW YORK, August 5, 1914.

The Week's Prices

Cents Per Pound for Early Delivery

	Copper, New York			Lead		Spelter	
July	Lake	Electro-lytic	Tin, New York	New York	St. Louis	New York	St. Louis
29	13.25	12.87½	30.95	3.90	3.72½	5.10	4.95
30	13.60	12.75	30.62½	3.90	3.72½	5.05	4.90
31	12.87½	12.50	34.00	3.90	3.72½	5.00	4.85
Aug.							
1	12.87½	12.50	38.00	3.90	3.72½	5.00	4.85
3	12.87½	12.50	50.00	3.90	3.72½	5.00	4.85
4	12.87½	12.50	57.00	3.90	3.72½	5.00	4.85

Copper is dull and nominal prices are lower. Intense excitement and fear have prevailed in the tin market, which in a week has advanced nearly 100 per cent., having sold August 4 at 60c. and to-day it may go higher on the strength of England declaring war. Lead is dull and easier. Spelter is quiet and a few points lower. Antimony has advanced sharply and its quotations are nominal. Both tin and antimony are sold only for cash and subject to immediate acceptance. The London Metal Exchange is closed and the New York Exchange closed yesterday until further notice.

New York

Copper.—The market is at a standstill and quotations are nominal. Late last week there were a few sales of electrolytic on a basis of 12.75c., 12.87½c. and 13c., cash, New York, on bids. At the moment sellers see no virtue in pressing for sales and it is not considered likely that prices will decline much further. Exports, which amount to about 60 per cent. of production, have been stopped, of course. From the West there are reports that production will be curtailed at many refineries and this will assist in supporting prices. The Copper Producers' Association has decided to issue no monthly statements of production, consumption and stocks until further notice, and the trade will be working in the dark until these are resumed. The nominal quotation for Lake is 12.87½c., and for electrolytic, 12.50c., cash, New York. No cables are being received from London. At the beginning of this week quotations on brass and copper products were reduced ½c. to ¾c. per lb., the reduction including a decline in hot-rolled sheet copper of from 19c. to 18½c. Exports of copper this month total 3053 tons.

Copper Averages.—The Waterbury average for the month of July was 14.12½c. The average New York price for Lake, based on daily quotations in *The Iron Age*, was 13.70c., and for electrolytic, 13.40c.

Tin.—Since last Thursday consumers of tin have been in a state bordering on panic and in the offices of dealers intense excitement and pressure have prevailed. Perhaps never before have sellers received so many urgent demands for the metal. Telephone wires have been constantly busy morning, noon and night, many of the calls coming long distances. The highest price was reached last evening when 60c. was paid for a small lot. To-day, on the strength of information that England has declared war on Germany, prices are expected to soar still higher. On the other hand, there are conservative members of the trade who say that the fears of consumers may be excessive and that the price may decline several points as quickly as it advanced. August 1 there was a stock in this country of 1300 tons and since then the Minnehaha has arrived from London with 625 tons, while the Minnetonka is due here August 10 with 365 tons. There is estimated to be afloat on unknown steamers 1315 tons and on two other ships 100 tons, making a total of 1780 tons afloat. Since England has taken a hand in the war, it is pointed out that Germany will need all of her war vessels near home and that England, with vessels which she can spare from her enormous fleet, will have little difficulty in keeping the Atlantic lane open. The Atlantic Transport Line, which carries considerable tin, has not yet suspended sailing. The bear side of the market is pointing to a report that England will suspend the shipment of all merchandise, but this is an unconfirmed report. In cabling Europe dealers have to write their messages in plain English, no cipher or codes being permitted, and even under these circumstances no reply has been received to four cables which were sent on Monday. On July 29 a few small sales of spot sold at 30.95c., though tin on steamers due was sold at 30.75c. and prompt shipments from London at 30.60c. On July 30 there was a fair demand for spot from consumers and sales were made at 30.65c., 30.70c. and 30.75c., about 100 tons being sold. Consumers were becoming anxious to lay in an extra stock. July 31 was a day exciting in its developments but not much business was done. The London and New York exchanges closed and prices began to mount. Offers of 32.50c. and 33c. were made and declined and some resale lots were sold at 40c. August 1 consumers clamored for the metal and sales were made one after another which were 1½c. apart, the lowest prices being 36c. to 40c. per lb. The fear at this time was that the supply might be cut off in all directions. August 3 the lowest price was 48c. and the few ton lots were sold at this price up to 50c. On August 4 the market became extremely tense and sales were made on bid only, mostly between 55c. and 58c. for 5 and 10-ton lots, but the total turnover was small.

Lead.—There have been no offerings less than 3.90c., New York, and nothing less than 3.72½c., St. Louis, but this latter price is equal to 3.87½c., New York, and indicates weakness. The market is dull. A strengthening influence is a belief that England may need lead for war purposes and be unable to await the arrival of metal from sources other than the United States.

Spelter.—The quotations of 5c., New York, and 4.85c., St. Louis, are largely nominal in the absence of demand. The greatest hope for spelter is in increased activity at the brass mills, but there are no signs of this at present.

Antimony.—This metal, for which we are dependent on Europe, has little or no market at present, but prices have advanced because of shipping conditions. Nominal prices are 8.50c. for Cookson's, 8c. for Hallett's and 7c. for Hungarian.

Old Metals.—There is no market. We guess dealers' selling prices are nominally as follows:

	Cents per lb.
Copper, heavy and crucible	12.00 to 12.50
Copper, heavy and wire	11.50 to 12.00
Copper, light and bottoms	10.50 to 11.00
Brass, heavy	8.00 to 8.25
Brass, light	6.75 to 7.00
Heavy machine composition	11.75 to 12.00
Clean brass turnings	8.00 to 8.25
Composition turnings	9.50 to 9.75
Lead, heavy	3.70
Lead, tea	3.40
Zinc scrap	3.85

Chicago

AUGUST 3.—Prices for copper and tin are purely nominal. In a general way copper is weaker and tin values are soaring. Prices for tin as high as 50c. are reported. As yet, there has been no material change in the value of other metals. Of antimony there appears to be an adequate stock for the present. We quote as follows: Casting copper, 13c.; Lake copper, 13.50c. for prompt shipment; small lots, ⅛c. to ¼c. higher; pig tin, carloads, 30.75c.; small lots, 33.75c.; lead, desilverized, 3.85c., and corroding, 4.10c., for 50-ton lots; in carloads, 2½c. per 100 lb. higher; spelter, 4.95c.; Cookson's antimony, 9.50c. for cask lots; other grades, 8c.; sheet zinc, $7, f.o.b. La Salle or Peru, Ill., less 8 per cent. discount in carloads of 600-lb. casks. On old metals we quote buying prices for less than carload lots as follows: Copper wire, crucible shapes, 11c.; copper bottoms, 9.75c.; copper clips, 10.25c.; red brass, 10.25c.; yellow brass, 7c.; lead pipe, 3.30c.; zinc, 3.50c.; pewter, No. 1, 23c.; tinfoil, 25c.; block tin pipe, 26c.

St. Louis

AUGUST 3.—Lead has been rather quiet, with Missouri brands steady at 3.72½c. to 3.75c. Spelter has been strong and active, with an advancing tendency, and quoted at 4.87½c. to 4.90c. Sales have been large for both present and future delivery. Copper has been

quiet at 13.85c. for electrolytic and 14c. nominal for Lake. Antimony has been dull, with Cookson's quoted at 7.37½c. to 7.60c. In the Joplin ore market the situation has been good with zinc blende selling at $38 to $40 per ton for 60 per cent., the choicest lots reaching as high as $43 or more. Calamine was quiet but strong at $20 to $22, with the choicest grades commanding $26. Lead ore was firm at $46. The production is being increased. Miscellaneous scrap metals are quoted as follows: Light brass, 5.50c.; heavy yellow brass, 7.50c.; heavy red brass and light copper, 9.50c.; heavy copper and copper wire, 10.50c.; zinc, 3c.; lead, 3.25c.; pewter, 21c.; tinfoil, 24c.; tea lead, 3c.

Iron and Industrial Stocks

NEW YORK, August 5, 1914

The sudden breaking out of hostilities between Germany and Austria-Hungary on one side and Servia, Russia and France on the other side caused such an avalanche of American securities to be thrown on our domestic exchanges by European holders that complete demoralization of prices and heavy failures appeared imminent. The New York Stock Exchange was closed indefinitely on Friday morning and other stock exchanges in the country followed its example. Quotations, therefore, are only available for Wednesday and Thursday of the past week, when the range of prices on active iron and industrial stocks was as follows:

Allis-Chal., com.	6 - 8	Pressed Stl., com.	34 - 39
Allis-Chal., pref.	32½ - 34¾	Ry. Spring, com.	19¾ - 23
Am. Can, com...	19¼ - 23⅝	Republic, com...	18½ - 20¼
Am. Can, pref...	80 - 86½	Republic, pref...	78 - 81½
Am. Car & Fdy., com.	44 - 47⅞	Rumely Co., com.	7½ - 9⅜
		Rumely Co., pref.	22 - 24
Am. Car & Fdy., pref.	112 -113	Sloss, com.....	19½ - 21
		Pipe, com.....	9
Am. Loco., com..	20¼ - 24⅛	Pipe, pref.....	30
Am. Steel Fdries.....	27½	U. S. Steel, com.	50½ - 56⅞
Bald. Loco., com.....	42	U. S. Steel, pref.	106½ - 108¼
Bald. Loco., pref.....	105⅜	Va. I. C. & Coke.....	37
Beth. Steel, com.	30 - 35⅞	West'gh'se Elec..	65½ - 74¼
Beth. Steel, pref.	81 - 83	Am. Ship, com.....	29
Case (J.I.), pref.....	82¼	Chic. Pneu. Tool.	46½ - 51¼
Colorado Fuel...	20½ - 23¼	Cambria Steel...	43½ - 46¼
Deere & Co., pref.	92½ - 92¾	Lake Sup. Corp..	12½ - 13½
General Elec.....	138¾ - 143½	Pa. Steel, pref...	63 - 63½
Gt. N. Ore Cert..	22½ - 26⅞	Cruc. Steel, com.	14½ - 15¼
Int. Harv., com.	82 -101¾	Cruc. Steel, pref.	88 - 90¼
Int. Harv., Corp.	83 - 97	Harb. Wk. Ref., pref...	99
Int. Harv. Corp, pref.	117	La Belle Iron, com.....	28¾ - 29
Lackawanna Stl.	26½ - 28½		
Nat. En. & St., com.....	9 - 9½		

Dividends Declared

The National Lead Company, regular quarterly, 1¾ per cent. on the preferred stock and ¾ of 1 per cent. on the common stock. The preferred is payable September 15 and the common September 30.

The Eastern Steel Company, regular quarterly, 1¾ per cent. on the first preferred stock, payable September 15.

The American Radiator Company, regular quarterly, 1¾ per cent. on the preferred stock, payable August 15, and 2½ per cent. on the common stock, payable September 30.

Monthly Tin Statistics

The July deliveries of tin into domestic consumption were good, amounting to 3900 tons. Total deliveries for seven months show a decrease of 600 tons as compared with the same period last year. The total visible supply July 31 was 14,167 tons, against 16,027 tons June 30. The supply July 31, 1913, was 12,063 tons.

The Minnesota Co-operative Iron Company, Duluth, Minn., has been incorporated with a capital stock of $350,000 to engage in a general mining business. The incorporators and officers are James Cardley, president; J. L. Dorsey, secretary; T. E. Lewis, vice-president and treasurer.

The Carnegie Steel Company will build a large carpenter and pattern shop at its Ohio works at Youngstown. The building is to be of concrete and steel construction.

JOBBERS MEET THE PRESIDENT

Views Exchanged on Features of the Clayton and Trade Commission Bills

The conference of 30 representatives of wholesale interests with President Wilson at the executive offices in Washington on Wednesday, July 29, brought out a free expression concerning phases of the Clayton bill and the Trade Commission bill. The delegation from the National Hardware Association was headed by its president, W. D. Taylor, George Worthington Company, Cleveland; that from the National Supply and Machinery Dealers' Association, by President Charles S. Farquhar, Chandler & Farquhar Company, Boston, and that from the Sheet Metal Club by Vice-President Edgar Lyon, Lyon & Conklin Company, Baltimore. The other lines represented were dry goods, glass, drugs, jewelry and plumbers' supplies.

At a preliminary meeting of the delegation an address to the President was formulated. It commended his effort "to lessen the uncertainty that surrounds some of the present legislation." Referring to the Trade Commission bill, the address urged that provision be made so that business men could submit propositions before putting them into effect and receive the sanction or disapproval of the Trade Commission. Section 2 of the Clayton bill was approved in so far as it applies to price discrimination by trusts, particularly the making of low prices to drive out competition and establish a monopoly. It was urged, however, that there might be harm in such provision to the business of the average dealer and might hamper him in competition with the great corporations. The average merchant, it was stated, often found reasons for quoting a lower price in one section of the country than in another. The address referred particularly also to Section 4 of the Clayton bill and argued that manufacturers often find it advisable to establish exclusive agency arrangements for the purpose of inducing a dealer to carry a full line of their goods in stock. Otherwise each of three or four merchants might have an incomplete assortment and the buying public would suffer. An amendment to Section 4 was suggested so that the practice mentioned should be considered unlawful only where conducted for the purpose of creating a monopoly.

President Wilson replied that it was recognized that the exclusive selling problem was one very difficult to reach by legislation. He agreed that exclusive selling arrangements might result in no harm in a large city, because of the presence of numerous distributers, while serious harm might be done in rural communities where there was but one distributer. The President pointed out in speaking of the Trade Commission bill that it would be extremely difficult to enforce the suggestion of the delegation. No matter how hard a business man endeavored to detail his programme for approval or disapproval by the commission there might be found later deviations without any intention of doing things which had not been passed upon by the commission. He also suggested that the Trade Commission might approve of a programme, but that the Department of Justice might differ and might institute a prosecution. He felt that it would be impossible to tell business men how to proceed in accordance with the law in advance.

The President replied to the suggestion that legislation regulating corporations should also apply to partnerships and individual businesses that scores of thousands of corporations are now reporting to the Commissioner of Corporations and to extend the scope of this work would involve monumental labor, while a building the size of the Capitol would be needed to take care of the annual reports, to say nothing of other data, records and correspondence. In general, the President suggested that while the legislation about to be passed would not meet all the wants of the general business public there would be a gradual development, eventually putting the business of the country on a firm and satisfactory basis. He expected the pending trust legislation to be passed within the next six weeks.

How Roads May Get on Without Higher Rates

Central Lines Get Increase on Class Rates, but Generally Commerce Commission Decision Gives Reasons for Refusing Advance

WASHINGTON, D. C., August 4, 1914.—The Interstate Commerce Commission on August 1 handed down its long expected decision in the so-called 5 per cent. rate advance case. The finding constitutes a partial victory for the railroads in Central Freight Association territory lying between the Buffalo-Pittsburgh line and the Mississippi River. These roads are conceded the 5 per cent. advance petitioned for, but the Commission excepts from the increase the rates on coal, coke, iron ore, cement, brick, tile, clay, starch, and plaster, as to which it is asserted the carriers "did not sustain their burden of proof." The proposed increases in lake-and-rail rates and in rates between Central Freight Association territory and other portions of official classification territory are disallowed, as is also the proposed minimum increase of 5 cents a ton on those commodities for which charge is now made of less than $1 a ton. Railroads in so-called New England territory, lying east of the Hudson River, and in trunk line territory, lying between the New England territory and the Buffalo-Pittsburgh line, are denied the advance asked for; but indirectly, through the increases in Central Freight Association territory, in which they will participate, the trunk lines will profit substantially. The effect of the decision, as far as it goes, is beneficial to the railroad world and therefore to the industries dependent upon the roads and served by them.

The iron and steel trade can regard the outcome with equanimity. The increases granted, directly and indirectly, will enable the roads to purchase some of the material and equipment of which they have stood in need for many months, while the retention of existing rates on coal, coke and iron ore will save iron and steel producers from what would have proved a burden, however willing some of them were to bear it in the interest of the general prosperity of the country.

RAILROAD REVENUES INADEQUATE

Following is a brief synopsis of the opinion which in its entirety constitutes a voluminous pamphlet of 77 pages:

1. The contention of the railroads that their revenues under the present scale of rates are inadequate is sustained, the Commission saying that "the operating income of the railroads in official classification territory, taken as a whole, is smaller than is demanded in the interest of both the general public and the railroads."

2. The Commission points out that the official classification territory embraces three rate territories, known as the New England territory, lying east of the Hudson River; the trunk line territory, lying between the New England territory and the Buffalo-Pittsburgh line, and the Central Freight Association territory, lying between the Buffalo-Pittsburgh line and the Mississippi River, and that the financial and traffic conditions of the railroads operating in these three rate territories differ widely. The Commission finds that the rates in Central Freight Association territory, as a whole, are not only lower than the rates in either trunk line or New England territory, but that they are lower than the rates in any other part of the United States. If the average freight rate had been as high on the Central Freight Association territory lines as on the roads in trunk line territory the former would have earned in 1913 $56,000,000 more than they actually did, and the 28 representative roads in Central Freight Association territory which are most in need would have earned $29,000,000 more.

3. The aggregate mileage of the roads in Central Freight Association territory is greater than that of all the roads in the New England and trunk line territories combined. The increase in revenues resulting from increases in rates in Central Freight Association territory will afford some relief to practically all the lines in official classification territory which are in need of additional revenues, except the New England lines, whose needs are being cared for locally. The three great trunk lines have each a large mileage in Central Freight Association territory, so that their revenues will be augmented by rate increases in that territory. Thus, of the New York Central system's 12,690 miles of line, 8938, or more than two-thirds are in Central Freight Association territory. Nearly one-half of the mileage of the Pennsylvania system is also in that territory, and more than one-half of the Baltimore & Ohio. The Erie, the Chesapeake & Ohio, and the Norfolk & Western also have important mileage in Central Freight Association territory. The systems in trunk line territory which have no mileage in Central Freight Association territory are in large part roads with large anthracite coal traffic and they are very prosperous.

CLASS RATES ADVANCED

4. The Commission finds that the class rates effective in Central Freight Association territory are so low that an increase of 5 per cent. would clearly not be unreasonable, but points out that the class rate structure in that territory is honeycombed with inconsistencies, and says:

> Counsel who presented and argued the case for the Central Freight Association lines admitted and definitely stated that while the 5 per cent. increase would help the financial situation, the whole rate structure in that territory needed a readjusment; that many of the lines in the territory would not survive without "an overhauling of their rates," and "could not serve the public as they should until those rates are adjusted and brought upon some logical basis." He also stated that if the rates were now advanced on the so-called 5 per cent. basis it would be but a short time before those lines would be before us again. He gave express notice that the Central Freight Association lines, if the 5 per cent. increase were now allowed, would "in due time file tariffs and bring the matter to the attention of the Commission."

5. The Commission finds that the carriers operating in Central Freight Association territory are entitled to an increase not exceeding 5 per cent. on all class and commodity rates on shipments wholly within that territory, except the rates on coal, coke, iron ore, cement, brick, tile, clay, starch, and plaster, as to which the carriers did not sustain their burden of proof, and any rates which are controlled by specific unexpired orders of the Commission. The proposed increases in lake-and-rail rates and in rates between Central Freight Association territory and other portions of official classification territory are disallowed. The effect of the findings is also to disallow the application of the proposed minimum increase of 5 cents a ton on those commodities for which a charge is now made of less than $1 a ton. This minimum increase in some instances would have resulted in increasing rates as much as 25 to 50 per cent.

HOW THE ROADS MAY INCREASE REVENUES

6. The Commission finds that the financial condition of the carriers in trunk line territory does not warrant a general increase of freight rates and that the needs of the New England lines are being cared for locally, and disallows the proposed increases in those territories; but under the title of "How carriers may increase their revenues," finds "that great opportunity exists for increasing the net revenue of all carriers in official classification territory otherwise than by resorting to a general advance in their freight rates," and makes the following specific suggestions:

7. The Commission suggests that, following the plan adopted in New England, conferences be held between the State commissions, the carriers and representatives of the public with a view to advancing such passenger fares as may be shown to be clearly unremunerative. With respect to fares fixed by statutes in certain States, the Commission expresses confidence that if these fares are clearly shown to be unduly burdensome to the carriers the people of those States will cheerfully acquiesce, as the people of New England have done, in reasonable increases, and that the necessary legislative authority will be promptly given.

8. The Commission suggests that "all the railroads in official classification territory examine carefully their freight rates, rules and regulations with a view to increasing rates that are found to be clearly unremunerative, and modifying burdensome rules and regulations relating to minimum weights and similar matters where this may justly be done," saying: "Many unremunerative rates had their origin in fierce competition for traffic or under the menace of the big traffic of powerful shippers. Many such rates have doubtless been continued through ignorance of the loss they entail upon the carriers."

9. The Commission suggests that "all railroads in official classification territory should ascertain to what extent * * * special services now being rendered by the carriers to shippers for which no special charge, or a noncompensatory charge, is made * * * constitute an unjust burden upon the carriers or result in unjust discrimination among the shippers." In this connection the Commission calls attention to compilations prepared by it from the carriers' answers to the Commission's inquiries showing the practice of individual roads as to: "(a) allowance of free time for loading or unloading carload freight; (b) collecting and delivering freight; (c) storing freight; (d) transporting containers; (e) furnishing and transporting dunnage, preservatives, etc.; (f) furnishing or paying for wharfage and dockage; (g) refrigeration service; (h) loading and unloading carload freight; (i) reconsigning carload freight; and (j) other special services." The Commission also refers to "independent investigation of some of these subjects, and particularly of switching, lighterage and storage in New York, Chicago, and other large cities," the results of which will be submitted later for the consideration of carriers and shippers.

10. The Commission recommends that the practices of granting free transportation of passengers and private cars should be further restricted by the carriers and calls attention to the fact that during the 11 months ending November 30, 1913, 78 roads in official classification territory issued 629,668 annual passes and 408,848 passes for shorter terms, and in addition thereto in the single month of June, 1913, issued passes for single trips to the number of 482,709.

INCREASED CAR EFFICIENCY URGED

11. The Commission recommends "a careful review of methods for increasing freight-car efficiency," saying: "Taking the average of all roads in official classification territory for the whole year, the time a car is moving in trains probably does not exceed 3 days out of 30, and the car is under load only 2 out of those 3 days. Furthermore, the cars under load are loaded on an average to only about 58 per cent. of their capacity. The percentages of empty movement and of waste capacity in loaded cars have both grown."

12. The Commission calls attention to the fact that fuel, next to wages, is the largest item in operating expenses; that the railroads in the United States report their aggregate fuel cost to be about $250,000,000 a year, and that the cost of coal is increasing, and adds: "Much has been done in recent years by means of mechanical devices and otherwise to reduce fuel costs, * * * but it has been demonstrated clearly that by knowledge and care on the part of employees and the management much greater savings can be made."

13. The Commission also suggests that "in other departments the management undertake, in co-operation with employees, an extensive inquiry into possible economies in operation," adding: "The increased operating ratio of recent years is accounted for directly, in large part, by increase in the rate of wages. But even greatly increased rates of wages are perfectly consistent with reduced unit labor cost."

14. The Commission suggests that "as soon as reasonable opportunity offers, properties heretofore acquired by the carriers which are not used or held by them for transportation purposes be sold," adding: "From compilations prepared by the Commission of the incomplete replies to our questions, it appears that the aggregate cost of such investments in official classification territory was more than $684,000,000. Included in these are properties of the aggregate cost of $183,146,659, from which no net income whatsoever was received in the year 1913. These investments by the carriers have, through increasing the amount of capital required to be raised, imposed in many cases a great and unnecessary strain upon the carriers' credit, with the result of an increased charge on all new capital secured and sometimes of preventing improvements which would have yielded transportation economies."

COSTS "INFLUENCED" UPWARD

15. The Commission also suggests "that an investigation be made with a view to determining to what extent the cost of construction or of acquiring properties or capital or of operation is being increased through the holding by directors, officers, or employees of interests in other concerns with which the carrier has dealings," and calls attention to the fact that the compilation from answers to the Commission's questions on this subject show that "a considerable proportion of the officers and directors of railroad companies have interests in such concerns, including locomotives works, car-manufacturing companies, steel and iron works, coal mines, wire works, bridge companies, manufactories of railroad appliances, oil companies, electric-machinery companies, glass companies, cement companies, warehouse companies, surety companies, railroad publishing houses, and trust companies." It also refers to a further investigation into the subject which is being conducted independently by the Commission.

16. The Commission suggests that all expiring contracts with sleeping-car companies should be carefully reviewed before being renewed.

The Commission makes no suggestion in regard to railroad mail pay, "as that subject is under investigation by another branch of the government," adding that "it may be assumed that if the compensation for the service is found to be unjust to the carriers relief will promptly be afforded."

The Commission concludes its report by saying: "We may justly feel proud of the development of our transportation system. Despite occasional discreditable chapters the history of our railroads has been marked by great achievements. There is a growing spirit among the carriers of co-operation with the Commission in its efforts to enforce the law. With the application of correct and helpful accounting, the establishment of sound business methods, and a better understanding by both carriers and the public of their mutual obligations, to which we believe this investigation has contributed, the future is full of promise. We see no reason why our American railroads should not enjoy a large measure of prosperity consistently with just and reasonable rates."

The opinion of the Commission is concurred in by Commissioners Clements, Clark, Meyer and Hall. Commissioners McChord and Daniels filed separate dissenting opinions, in which they expressed the view that the advanced rates should have been extended to railroads in New England and trunk line territories.

W. L. C.

The Terry Steam Turbine Company, Hartford, Conn., has appointed Fidanque Bros. & Sons, of New York and Panama, with main office at 15 Whitehall street, New York, representatives for Panama and the Canal Zone. The company's Cleveland office, which is in charge of L. G. Finlay, has been moved from 710 New England Building to 503 Union Building, Cleveland, Ohio.

OBITUARY

Adolf Martens

A cablegram received by Prof. H. M. Howe announces the death of Prof. Adolf Martens, head of the Royal Material Testing Bureau at Berlin-Lichterfelde, Germany. Attendants at the congress of the International Association for Testing Materials, held in New York in September, 1912, will recall Professor Martens as one of the leading representatives from Germany. He was born March 6, 1850, at Backendorf bei Hagenow, i.M. He worked two years practically in machine construction, then studied at a trade school in Berlin, and in 1871 entered the bridge construction bureau of Ostbahn in Bromberg, where he was engaged in the design of the Weichsel und Memel bridges. Some years later he moved to Dortmund and devoted himself to the testing of materials and the practical study of the iron industry. In 1875 and the following year he was occupied with the building of the Berlin-Nordhausen Railroad, and at this time began his first investigations of the microscopic structure of iron. In 1884 he undertook the direction of what is now the Royal Material Testing Bureau at Berlin-Lichterfelde. Professor Martens was a member of the Royal Prussian Academy of Science, president of the German Society for Testing Materials, and had the degree of doctor from the Royal Technical High School at Dresden. He was also a member of the Austrian Engineering and Architectural Society, an honorary member of the Institute of Ways of Communication of St. Petersburg, and held a medal of the Verein Deutscher Ingenieure.

PROF. ADOLF MARTENS

A TRIBUTE FROM PROFESSOR HOWE

Responding to the request of *The Iron Age* for an estimate of Professor Martens' character and work Professor Howe has written the following:

"The death of Geheimrat Martens removes a stately and inspiring figure, a man of exalted character and broad views, who without self-assertion, indeed with apparent self-forgetfulness, has played a very important part in the development of the present wonderful industrial eminence of Germany. When he asserted his great powers, you felt that it was not because of the prominence which this gave him but in spite of it. His ready self-abnegation was shown by his cheerful abandonment of the work of investigation, for which he had rare powers, and accepting instead the arduous and rather thankless task of administration. All reasonable people, even in differing with him, must have felt absolutely sure of the nobility, genuineness and depth of his convictions. Those of us who knew him even moderately well must have felt the warmtht and tenderness of his heart, unmaskable by the more prominent aspects of so dominating, indeed so overwhelming a personality."

WILLIAM E. CLARK, long well known in the railroad world, and in recent years connected with the Rail Joint Company, New York, died at the home of his son, Dr. Clark, at Lempster, N. H., July 5. He was born in Manchester in 1847. Enlisting in the navy at 16 he served three years in the civil war. He was engaged in railroad bridge building after the war and later was made roadmaster of the Connecticut Division of the Boston & Maine, serving in this capacity for nearly 25 years. He became connected with the Rail Joint Company in 1897 and has been an important factor in that organization.

NATHANIEL C. LOCKE, Salem, Mass., widely known as an inventor of mechanical devices, died July 30, aged 76 years. A native of Hopkinton, N. Y., he was trained as a mechanic, and followed the trade in one capacity or another all his life. His inventions were many, and included mechanisms to regulate water and steam pressure and speed limit attachments, including the engine stop which bears his name and is widely used as a safety device. He leaves a widow, a son and a daughter.

MONTROSE BARNARD, of Beach & Barnard, dealers in machinery, 126 Liberty street, New York, died July 29 at a hospital in Newark, N. J., following an operation, aged 54 years. He was born in Georgetown, D. C., and rose to the rank of major in the Pennsylvania National Guard after severe experience in handling troops in riots in the bituminous coal district. He leaves a widow and one daughter.

PEARSON M. WALTON, proprietor of a machine shop at 1019 to 1029 Germantown avenue, Philadelphia, died July 27, aged 75 years, following an operation. He saw service in the civil war, was severely wounded, and after his recovery opened a machine shop, establishing his present shop in 1872. He leaves a widow and three children.

FREDERICK C. SHAYS, for many years a salesman for the American Sheet & Tin Plate Company, died at his home in Webster Groves, St. Louis, July 28, aged 69 years. Before his connection with that company, Mr. Shays for some years represented the W. Dewees Wood Company, McKeesport, Pa., in the Chicago district.

WILLIAM H. ANDERSON, president W. H. Anderson Tool & Supply Company, Detroit, Mich., died suddenly July 28, aged 77 years. He leaves a widow, two sons and a daughter.

FRED J. SCHROEDER, traffic manager for the A. M. Byers Company, Pittsburgh, maker of wrought-iron pipe, was drowned August 2 at Hulton, Pa. He was 24 years old.

Vanadium Steel in Locomotives

The extent to which vanadium steel is entering into the manufacture of locomotives is indicated by the following table showing the vanadium parts applied to locomotives built or ordered from January, 1913, to May 15, 1914.

Name of part	Number of engines equipped	Number of parts applied
Driving axles	476	1297
Main rods	377	822
Side rods	284	1986
Frames	993	2054
Crank pins	198	612
Piston rods	69	138
Springs (engine and tender)	366	
Engine truck axles	62	62
Wheels		700
Tires		1150
Cylinders (vanadium cast iron)	260	540

With the exception of wheels and tires this applies to new power only.

Wheeling Steel & Iron Company, Wheeling, W. Va., in announcing its purchase of the Wheeling Sheet & Tin Plate Company, states that hereafter this business will be conducted through the general office at Wheeling and various sales offices. The officers of the company are as follows: Isaac M. Scott (formerly president Wheeling Sheet & Tin Plate Company) president and chairman of the board; C R. Hubbard, (formerly president Wheeling Steel & Iron Company) chairman executive committee; John Duncan, vice-president and general manager of sales; F. W. Henderson, vice-president and treasurer; C. J. Hunter, secretary; W. H. Higgins, assistant secretary and traffic manager. There will be no change in the company's policy of distributing its tubular goods, tin plate and other products.

European War and Iron and Machinery Trades

Shipments Held Up at New York and Exports Stopped — The Ferromanganese Situation—Merchant Marine Sadly Needed

Some of the first effects of the European war upon the iron and machinery trades are detailed below. Exports from New York are suspended and deliveries on many thousands of dollars' worth of machinery have been stopped by telegrams to all the machinery centers of the country. The possibilities of the ferromanganese situation are canvassed and Pittsburgh opinion is quoted as to the probable effects of the war on the steel trade of the country. Russian manufacturers of iron and steel were about to place contracts in the United States for the building of new works, but all such negotiations are suspended. In a special contribution the opportunities suddenly opened up for American manufacturers in South America are presented. Hon. James T. McCleary, secretary of the American Iron and Steel Institute, cogently applies the overwhelming argument European war has supplied for the building of an American merchant marine.

New York Exports at a Standstill—Machinery Shipments Stopped

Exports from the port of New York are at a standstill and manufacturers and exporters are in the dark not only as to when they may expect to resume shipments, but as to the fate of many thousands of dollars worth of their products which were en route to European countries now entangled in war. One large machine tool interest had machinery on the way to France, Germany, Austria, Italy, England and other countries. Other shipments are lying on various piers and wharves about New York. Even a shipment of pneumatic tools and parts consigned to South Africa got no farther than the ship, for it was announced that the vessel, flying the British flag, would not sail. Importations, of course, are nullified to the same extent as exports.

The machine tool export trade in New York City received its first shock incidental to the war on July 29 when an important German house whose yearly exports run up into the millions received a cable from its home office directing that all shipments to Germany and to the branches in other European cities be detained. This house, as did others with similar affiliations, at once sent telegrams to American manufacturers throughout the country, principally in the Middle West, asking that no further shipments be made to New York. The complications which arose were many. En route to the city was machinery, there was more on steamship piers waiting to be placed aboard ships and still more was in the holds of vessels almost ready to depart. On the Grosser Kurfuerst was a shipment valued at about $25,000 which could not be removed and on the General Grant was another but smaller one. Both of these consignments were insured by the foreign houses which shipped them, but this proved a needless precaution, as the ships were ordered by wireless to return to New York and both did. The General Grant shipment was again placed on the pier on August 4 and the consignor was notified to look after the property. The firms making the shipment were then in a quandary whether to ship the machines back to the makers or to place them in warehouses. The better course to follow all hinged on the probable duration of the war and this no one could tell. It was stated by a representative of one house that if the war lasted but three months it might be more economical to store the machinery, rather than pay freight rates three times over the same ground. This was assuming that the tools eventually went abroad. Then arose the question whether, under the circumstances, the orders involved could be considered as canceled or merely deferred. The natural desire was to consider the shipments as postponed, but the steamship companies said that the conditions justified their canceling contracts to transport the goods and the question then arose if cancellation of the orders was not effected automatically.

In a few cases houses which deal in machine tools, but which have no connections abroad and do not export, were requested to place in their warehouses temporarily machinery which inland firms had forwarded to this city for export.

Further complications and inconvenience were caused by the breaking of all financial intercourse between Germany and America and at least one foreign house has suspended all payments.

There are many interesting side-lights to the situation. One of these is that the machine guns used by the French army, which have been highly praised and which already have done terrible execution, were made with machine tools manufactured in New England. Another, which demonstrates the wonderful completeness of Germany as a fighting machine, concerns a machine tool maker of that country with an American branch. Under orders, this manufacturer some time ago supplied the Imperial Government with a list of the skilled machinists in the plant who could be turned over in an emergency for the manufacture of ordnance and projectiles. Still another, and one of an encouraging character, is that negotiations are under way for the placing of an order here for certain machinery to go to South America. Under ordinary conditions this equipment would have been ordered in Germany.

Spain is the only country to which one export house would undertake to deliver equipment. New York machinery houses have no fears with regard to the Orient, inasmuch as they are under no commitments there for the near future.

RUSSIAN CONTRACTS HELD UP

Some steel plants and blast furnace work which American firms expected to secure has been in prospect in Russia and it is believed that all this will be held up indefinitely. It was expected that the Dagenrog Metallurgical Company would place contracts during the next few weeks for the two new blast furnaces at Kertch, Russia. The New Russia Company has been considering the installation of a number of furnace distributers, contracts for which would probably have been placed shortly had the war not broken out. Another prospective Russian contract was a large dock coal handling plant on which a firm of American engineers is figuring.

Possible Effects from the Pittsburgh Viewpoint

PITTSBURGH, August 4, 1914.—It is not believed here that the return of foreign workmen for the war will seriously affect Pittsburgh manufacturing plants. So far very few men have returned, according to passenger agents connected with railroads reaching the seaboard. Hundreds of men have signified their desire to return if needed, but it is a serious question if transportation could be furnished them, on account of so many ocean liners being out of service. Local Government officials report a very large increase in applications for naturalization papers, as foreigners can refuse to respond to a call from their native countries to take up arms, after taking out their first papers.

Commenting on the possible effects of the European war on our steel trade, H. P. Bope, vice-president Carnegie Steel Company, said: "It is a little soon to hazard more than the most general prediction. It is not believed that labor will be seriously affected, on account of the inability of the naval reservists in this country to get transportation back to Europe. Indeed many of the men are not anxious to go back. We believe the effect of the war on the labor situation will be almost nil.

"With regard to exports, there will naturally be a considerable increase in the requirements of neutral markets from the United States. The difficulty here will be in transportation. Of course if England destroys or bottles up the German fleet the sea will be free to English and French bottoms, and in such case transportation is not likely to be seriously interfered with. The call to the colors in both nations, for seamen, is more on the passenger boats, as all officers and many sailors on the liners are naval reserves.

"More serious will be the disturbance in the producing plants in the warring countries, and production is apt to be very heavily curtailed, which would inure temporarily to the benefit of the American manufacturer. We dislike to look at the proposition from this point of view, however, as the terrible destruction of property bound to ensue must be made up sooner or later, and the United States will have to bear its share of the burden.

"As regards the importation of alloys, the curtailment in shipments of ferromanganese is liable to work serious disturbance to American steel manufacturers. The use of manganese in the manufacture of steel is so general and so necessary that if the supply is curtailed the less fortunate American plants which have no supply will have to close down. This would throw larger demands, of course, on those able to run."

Willis L. King, vice-president Jones & Laughlin Steel Company, when asked for an expression of opinion, replied: "I can hardly conceive of such great countries as Russia, England, Germany, France, Austria and probably Italy engaging in this enlightened age in a brutal war such as now threatens. I sincerely hope that yet some way may be found to avert this terrible catastrophe, as the loss of life and money would be enormous, and would set these countries back at least 50 years. To think that such great countries as these would go to war over such a small piece of land as Servia represents is hardly conceivable. Should the war develop, it will mean an immense drain on the gold resources of this country, but a good part of this would probably come back to us later. Viewed from a mercenary standpoint, I believe that in the end the effects of the war would be to increase greatly the foreign trade of the United States in iron and steel products, providing adequate shipping facilities can be had. If the war is prolonged for any length of time, American steel manufacturers will be greatly embarrassed in obtaining supplies of pig tin and ferromanganese. This in time would seriously affect the Jones & Laughlin Steel Company, which is a large consumer of both pig tin and ferromanganese."

Financial Considerations Uppermost at Chicago

(*Special Telegram*)

CHICAGO, ILL., August 4, 1914.—In the uncertainty which precedes the fixing of a definite programme by the banks and other financial interests, the effect of the European situation is more disconcerting than may be true later. Disturbances in the natural course of business in this district thus far noted have arisen entirely out of financial considerations and everywhere these overshadow all other questions. Specific instances of trade suspension due to the war situation include instructions from Europe to local shippers of machinery to suspend indefinitely, followed by the holding up of several shipments in transit, although this district has not been disturbed in an important way in this respect. One of the financially strongest railroads of the West has held up the rolling of a round tonnage of rails as the direct result of the present outlook. Another railroad which was to place a car order last week has postponed that action indefinitely. A car builder was asked for delay in shipment of material following a similar request from a railroad that its car order be suspended. A branch office reports receipt of instructions from executive headquarters to tighten up credit and limit extensions. It is credibly reported, but lacking in official confirmation, that work on a very large bridge placed last week by a Western railroad will be delayed pending an adjustment of financial conditions. A street railroad which had definitely planned the double tracking of its system, construction work to begin at once, has had its financial arrangements blocked and is postponing its plans indefinitely.

Mill communities where European labor predominates appear to be considerably excited, but there is little or no buying of transportation and there is as yet no depletion of working forces. In general, industry awaits the action of the banks which seem to hold the key to the local situation. Credit is now considerably restricted.

A Time to Push for South American Trade

(*Specially Contributed*)

Whatever may be the ultimate outcome of the war in Europe, regardless of how short its duration may be, this country will be greatly benefited as far as its South American trade is concerned, if advantage is taken of the opportunity presented. As is well known, English manufacturers control the bulk of the machinery trade in Argentina, while the Germans have almost full sway in many lines in Brazil. England has also been for a long time ahead of all other nations in exporting both black and galvanized sheets to Latin-American countries. It is only within the past few years that the American manufacturer has been able to break in on this business. In addition to their methods of salesmanship, English firms were probably first to see that iron sheets were better for tropical climates, especially near the seacoast, than steel sheets. On this they were able to build up a business that has increased at a rapid rate.

In farming machinery America undoubtedly leads all other nations, but in power plant equipment, including electrical machinery, the competition is very keen from Europe.

As to machine tools, comparatively little effort to obtain business in South America has been made by American firms and the possibilities of that market have been overlooked. While it is true that manufacturing is not greatly developed there, the demand for this class of machinery is growing faster than exporters in this country realize. Heretofore firms in this country have been content with the orders for special machines they received through their export agents, many of whom have their head offices in Europe. Spasmodic efforts have been made to get business directly and the disappointing results can be

traced, in most instances, to the ignorance of the manufacturers themselves as to the market they attempted to enter.

Many American manufacturers select their best salesman to introduce their goods, regardless of the fact that he is ignorant of the language and customs of the prospective customers on whom he calls. The resulting failure too often leads to the discontinuance of all attempts to establish an export business except through correspondence. Then, too, this correspondence is often conducted in a careless manner. A letter will be received from a Spanish customer, written in his own language. This is frequently translated by an employee having a working knowledge of the language, but the reply is sent in English, the inference being that the recipient also has a clerk who can translate from English into Spanish. The result of such correspondence is bound to be disappointing.

Europe's extremity in the war just beginning may be America's opportunity to corral the Central and South American trade that really belongs to this country. It all depends on the manufacturers and exporters as to how they handle the opportunity. It must not be overlooked that Germany almost controls the hardware trade in the Spanish-American countries south of us, with the exception of specialties in which this country excels.

It would seem to be the opportune time for the American manufacturer and exporter to set to work, and in their campaign for business, they should not overlook the methods that have been successfully employed by their European competitors.

The Ferromanganese Situation and the War

One effect of the European war on the steel trade of the United States centers in the supply of ferromanganese and manganese ore. This country, while independent so far as all other raw materials are concerned that enter into the manufacture of steel, is dependent on foreign sources for its manganese. The significance of that dependence is not small, for steel cannot be made without manganese.

The world's supply of manganese ore from which ferromanganese is made comes largely from Russia in Asia, from British India and Brazil. The ferromanganese manufactured in this country is made almost entirely from imported ores. The English and Germans produce the greater part of the ferromanganese consumed in the steel industry, including about half the American consumption, and they depend entirely on imported ores. The majority of the ferromanganese imported here, however, is the English product. The effect on the price and supply of the alloy in this country, of a war involving Russia, Germany and England is a matter steel manufacturers are canvassing with some solicitude. The actual mining of manganese in Russia will be largely reduced and perhaps suspended and the shipments of ferromanganese from England may be cut down seriously, while those from Germany will stop entirely. The year 1912 was a record one for Russian manganese mining, the total amounting to about 1,000,000 tons.

According to statistics compiled by the Bureau of Statistics of the American Iron and Steel Institute, the total production, imports and consumption of ferromanganese in this country in 1911, 1912 and 1913 in tons was:

	Production	Imports	Consumption
1911.....	74,482	80,263	154,745
1912.....	125,378	99,137	224,515
1913.....	119,496	120,000*	240,005*

*Estimated.

It will be seen that our domestic production has averaged about 50 per cent. of the consumption. Practically all of this is made by the United States Steel Corporation for its own consumption, though last year it made considerable sales to independent companies. The relation between production and imports has been interesting. With full employment of our blast furnaces, the domestic production has dropped because it was more profitable to make pig iron. Under other conditions it paid to make ferromanganese. In 1904, an off year, the domestic output was more than double the imports, while in the boom of 1906-7 it was less than two-thirds of the imports. Since then production and imports have nearly balanced. Statistics show that of a total importation of 387,196 gross tons of manganese ore in the fiscal year ending June 30, 1913, Russia in Asia contributed 125,736 tons; British India, 167,319 tons; Brazil, 71,300 tons; and Russia in Europe, 13,636 tons, the remainder coming from minor sources.

The effect on prices of the present war can be best appreciated when it is recalled that the Russo-Japanese war sent the price of ferromanganese in this country up to $150 per ton. Then English and German producers were handicapped only by a shortage in the supply of Russian ore, being more or less free to draw on India. It is understood that the majority of steel makers dependent on the foreign product are supplied for a few months ahead, some of them to the end of the year. There are fair supplies of manganese ore in this country. Some of the United States Steel Corporation's stock has been brought from South America in vessels in which its manufactured products had been taken there. It is possible that the only free source of ore during this war will be Brazil.

How the Need for an American Merchant Marine Should Now Be Met

BY JAMES T. M'CLEARY

In the lives of men and of nations it often takes an emergency to reveal a truth which should have been foreseen and provided for in times of calm. The experience through which Europe is now passing will have its lessons. While the waste and woe of war will be felt most keenly in the countries immediately involved, every country on earth will to a greater or less extent feel the effects of the conflict.

The countries involved are leaders in the world's industry and commerce. They own probably 95 per cent. of the ships engaged until the last week in international trade. Many of these merchant vessels dare not now go out upon the seas. In all the great harbors of the world they are lying idle. For the time being, international commerce depends largely on the meagre supply of ships belonging to neutral nations.

The United States is one of those neutral nations, and our ships are safe from seizure unless they violate the rules of neutrality. How many merchant ships flying the American flag are there in the European trade? Just six—the four vessels of the American Line and two of the vessels of the Red Star Line. Their total capacity is less than 70,000 tons, so they could transport only a very small fraction of the products of farm and factory for which our people could find a market in Europe.

Fortunately for us, our best customer, Great Britain, seems likely to remain supreme on the seas and be able to keep open for us a part of the European market. But with Great Britain involved in the war, many of her best ships may be withdrawn from commercial use for war service; and there would be risk in shipping goods in those left to commercial use. At best, therefore, we are likely to suffer for lack of American ships in which to transport the products for which we could now find an especially good market in Europe.

Fortunately for us, too, we are the most nearly self-sufficing nation in the world. In many lines the war will help to revive business, the effects of such revival

being gradually extended throughout the country. Millions of dollars' worth of goods that we have been buying abroad we will now make at home and hosts of men now idle will find employment. Once again will be shown the wisdom of the national policy that aims to preserve to the utmost our national independence and develop to the fullest extent possible our own resources of men and material.

In the improvement of business conditions thus brought about, however, it would be national shortsightedness and folly to forget the lesson now being pressed home on us, of the need of an adequate American merchant marine to promote our prosperity in peace and our security in war.

We have actually less tonnage engaged in foreign commerce now than we had 80 years ago. At one time we carried in American ships 92 per cent. of our foreign commerce. Now the figures are reversed, and we carry less than 8 per cent. of it under our own flag. How can the American merchant marine be rehabilitated? Three general plans have been proposed:

1. The so-called "free ships" plan.
2. The so-called "discriminating duties" plan.
3. The so-called "mail subventions" plan.

Under existing law American registry is open only to ships built in the United States and having in their crews a certain percentage of American citizens, for whom are prescribed certain standards of living.

The "free ships" plan proposed to do away with these requirements and admit to American registry ships built anywhere and operated by men of any country. Its advocates claim that this would give us cheaper ships operated at less expense, and that many ships now engaged in our foreign trade, which are owned principally or entirely by Americans but which for reasons of economy are operated under foreign flags, would be brought under our flag and become part of our merchant marine. They claim also that many new ships would be ordered in foreign shipyards and operated with foreign crews but under our flag.

The opponents of this plan admit that, for the time being, there might be a nominal increase in our merchant marine; that is, an increase in form but not in fact, an increase in name but not in nature. They argue that under this plan we would be paying too much for the whistle. Suppose, they ask, we admit that ships can be bought somewhat cheaper abroad than at home, because of the higher wages paid in this country, and that for the same reason ships can be operated less expensively with foreign crews than with crews composed in part of American citizens. Does that prove that this would be a wise national plan for us to adopt? It implies the doing away with American shipyards and the failure to develop American seamanship. Suppose that the nation on whom we have been depending for our ships should become engaged in war with some other nation, possibly with ourselves, where would we then get our ships? It is noteworthy in this connection that warships just completed in British shipyards and about to be turned over to Turkey (one of those countries that deem it good national policy to buy ships "abroad where they can be bought cheapest" rather than make them at home) have been seized by Great Britain for her own use.

The opponents of the so-called "free ships" policy deny that there would be any increase in our American merchant marine even if foreign-built ships were admitted to American registry, unless the standard of living prescribed by American law for crews on American ships were distinctly lowered and unless wages for such crews were materially lower than the present American standard. They insist that wise national policy demands that we maintain our national independence by promoting within our own borders the building of all ships needed for our national purposes of peace or war, and the education of a body of American seamen who would be loyal to our flag in times of trouble.

The "discriminating duty" plan would admit foreign goods imported in American ships at a lower rate of duty than if imported in foreign ships. The advocates of this plan point to the fact that it was by means of discriminating duties that the American merchant marine was brought to such great proportions before the Civil War, and they claim that the policy which was effective then would be effective now. The opponents of this plan, while admitting that under it our American merchant marine did grow and prosper before the Civil War, are reluctant to admit that this growth was because of this policy. They point to the fact, too, that we have entered into mutual treaty obligations with nearly all the civilized countries under which discriminating duties are barred. And they point to the further fact that more than half of all the goods imported from foreign countries are admitted absolutely free of duty. They say that the advocates of this discriminating duty plan believe in the protective tariff policy almost to a man, and that under the protective tariff policy the importation of non-competing articles, on which no duty is charged at the custom house, should be encouraged. But as to these non-competing articles, the discriminating duty policy would be wholly ineffective.

The "mail subvention" plan proposes to recognize the fact that ships can be built somewhat cheaper in foreign countries than in the United States and that they can be operated at less expense with foreign crews than with crews partly American. But they insist that far-sighted national policy would be satisfied with nothing less than complete national independence in a matter so vital as the building of our ships of war and of the auxiliary vessels without which our battleships would be practically useless.

They point to the fact that, situated as this country is geographically, our periods of peace are long, while our periods of war are short. Realizing the imperative need of auxiliaries for battleships in time of war, they propose that during periods of peace the required auxiliary vessels, through their use in commerce, shall be self-sustaining, that they shall be built under plans approved by the Navy Department and be subject to call by the National Government for purposes of war when required, and that they shall be used during periods of peace for the training of American seamen who will thus be capable of rendering service to this country in case of war.

They point to the fact that it is the prime duty of our National Government to provide for the common defense, and that the National Government is, as a matter of policy, charged with the carrying of the mails. They claim that it is capable of mathematical demonstration that the National Government can perform these two functions jointly more cheaply by means of the mail subvention than in any other way. Under this plan the Government undertakes to pay a certain sum per mile on the outward trip to vessels of American registry for the carrying of the mails, regardless of the amount of mail carried. To secure American registry under this plan vessels must be built in American shipyards in accordance with plans approved by the Secretary of the Navy, have crews composed of a certain percentage of American citizens, provide quarters and food of a certain standard for the seamen, and train a certain number of apprentices in seamanship. The owners of these vessels must also bind themselves to turn them over to the Government on demand whenever needed for use in war.

The two principal objections raised by opponents of this plan are, first, that it proposes "a subsidy" to be paid by all our people to the few who own the ships;

and, second, that a law of this kind which has been in effect for more than 20 years has failed to build up the American merchant marine.

To the first of these objections the advocates of this plan answer that the cry of "subsidy" is childish. They say that this cry might just as well be raised against the payment of teachers in our public school system. People who have no children to be educated in these schools are required to pay taxes for their support simply on the ground that the maintenance of such schools for the education of the children is wise public policy. So with the raising of taxes from the many to build roads that are used by the few. The building of good roads is wise public policy. So, it is answered, it is good public policy—nay, it is absolutely necessary for national independence and safety—for us to have within our own borders the yards in which to build ships and the opportunities to train seamen.

The act of March 3, 1890, they answer, has given us the only ships that we now have in our trade with Europe. And the law would give us more ships, ships in ample number, ships all our own, if the short-sightedness of some of our members of Congress and their constituents did not stand across the path of an amendment to that law raising the rates to the point which experience has shown to be necessary.

Most of this opposition has come from the Central West and the South. The proponents of this plan declare that there is poetic justice in the fact that to-day the food products of the Central West and the cotton of the South are going to find their markets restricted and the value of those crops vastly reduced by reason of the fact that at this trying hour we have almost no ships under the American flag to carry abroad our surplus of these products—this loss far exceeding the amount of the required mail subvention for a dozen years.

Pittsburgh and Nearby Districts

The Marshall Foundry Company, Pittsburgh, has sold to one concern, in two orders, gray-iron castings to the amount of $130,000; to another, $24,000, and to a third, $14,000. The company has also taken orders in the past week for about 4000 tons of ingot molds.

The National Roll & Foundry Company, Pittsburgh, with works at Avonmore, Pa., has received an order from the Central Steel Company, Massillon, Ohio, now building an open-hearth plant, for three stands of 24-in. bar mills and tables for rolling sheet bars.

The Trussed Concrete Steel Company, Youngstown, Ohio, has received orders for about 600 tons of fabricated steel for fireproofing construction for the new addition to be built at the University of Michigan, Ann Arbor, and also a contract for fireproofing material for a five-story office building at Middletown, Ohio. The company is also receiving a considerable number of orders for foreign shipment.

The Bessemer & Lake Erie Railroad, owned and operated by the Carnegie Steel Company, is said to be the largest owner of steel quipment in proportion to mileage operated of any railroad in the country. There are now 910,000 steel ties in the tracks of the Bessemer & Lake Erie. The company is now pursuing a policy of using only steel ties to replace wooden ties, with the idea of eventually equipping the roadbed entirely with steel. Last year 67,000 wooden ties were replaced by new steel ties made by the Carnegie Steel Company. The company also has a total of 63,000 all steel car wheels, 10,000 of which were put into use in 1912.

At Pittsburgh last week, the Fidelity Title & Trust Company and D. W. Kuhn were appointed receivers of the Pittsburgh-Westmoreland Coal Company. They were also appointed joint receivers for its subsidiary companies. An issue of $900,000 three-year notes fell due August 1, and arrangements had been made to refund them but the acute unfavorable financial conditions prevented this plan from being carried out. The receivership was deemed advisable to give sufficient time to refund the notes and to protect all interests. In addition to the note issue, the company has a $5,000,000 5 per cent. long time bond issue outstanding. It is stated that its current indebtedness amounts to not more than a month's business. The company owns about 16,000 acres of high grade coal and coking lands, with an annual producing capacity of 2,500,000 tons of coal and 300,000 tons of coke. Earnings, after deducting 5c. a ton for depreciation, amounted to $889,000 in the fiscal year ended November 1, 1913. The corporation has always shown substantial earnings which have been more than sufficient to pay its fixed charges, including sinking fund and interest. Operations will be continued for the present on the properties of the company.

The Republic Iron & Steel Company will this week operate its various Youngstown plants at a fuller rate of capacity than for some months. The Bessemer and open-hearth steel plants are on full, and the only idle departments are the 12-in. and 20-in. mills. The shafting department has started up after being idle several months.

The General Fireproofing Company, Youngstown, Ohio, is planning the erection of a large addition to its plant.

On Monday, August 3, the Baltimore & Ohio Railroad advised its connecting lines and other traffic affiliations that until further notice it will refuse shipments for export through Baltimore and other Atlantic ports.

The Apollo Steel Company, Apollo, Pa., maker of black and galvanized sheets, has appointed Theodore Geissman & Co., Inc., 332 South Michigan avenue, Chicago, authorized district sales agent in the Central West.

On Tuesday, August 4, foreclosure proceedings were begun in the Fayette County Court on a mortgage for $8,000,000 held by the Colonial Trust Company, Pittsburgh, as trustee against the Isabella Connellsville Coke Company. The mortgage was given April 1, 1909, payable in 30 years, with interest at 5 per cent. The trust company held $8,000,000 in bonds, covering 2967 acres of coal in Luzerne Township. It maintains the coke company defaulted in paying interest on the $6,515,000 still due and asks foreclosure for that amount and interest.

This week the Bollinger-Andrews Construction Company, Empire Building, Pittsburgh, will start work on its new plant at Josephine, Pa., for the manufacture of ingot molds. Considerable new equipment suitable for foundry purposes will be needed, including cranes.

The Concrete Steel Company, Youngstown, Ohio, will build an addition to its plant, 100 x 200 ft., which will be equipped with machinery for the manufacture of steel novelties.

The Carnegie Steel Company is now operating its Ohio works at Youngstown to about 80 per cent. of capacity, an increase of 5 per cent. over last week. The Youngstown Sheet & Tube Company's Bessemer and open-hearth plants and finishing mills are operating to about 80 per cent., and the Youngstown Iron & Steel Company, maker of black and galvanized sheets and pressed metal specialties, is running nearly full.

The Benner Drilling Tool Company, Pittsburgh, has been incorporated with a capital stock of $50,000, to manufacture water and gas supplies.

The Pittsburgh Foundry & Machine Company, which has operated a plant at Thirty-first and Liberty avenue, Pittsburgh, for some years, will build a new foundry at Twenty-sixth street and the Baltimore & Ohio Railroad. A steel building, 50 x 160 ft., with a 30-ft. leanto, running the entire length on each side of the building, will be erected. The company makes a general line of gray-iron castings up to 15 tons. It also operates a plant at Salem, Ohio, to which some large additions will be made in the near future. The McClintic-Marshall Company will erect the building above mentioned, which will require about 150 tons of steel.

The Westinghouse Electric & Mfg. Company, East Pittsburgh, Pa., has received an order from the Western

Reserve Steel Company, Warren, Ohio, for a 1600-hp. mill motor. The latter company is building a six-mill sheet plant which will be electrically driven. The same company has also placed an order with the William Tod Company, Youngstown, Ohio, for a large gear drive.

The Standard Bridge Tool Company, Bessemer Building, Pittsburgh, has received an order for two Thomas automatic spacing tables to be attached to Hilles & Jones punches, one to be installed in the Butler, Pa., and the other in the Hammond, Ind., works of the Standard Steel Car Company. These tables are duplicates of two furnished the same company last year. The Standard Bridge Tool Company also has an order for a hand-operated spacing table from the Mount Vernon Car Company, Mt. Vernon, Ill., and an order for a punching machine for the Pittsburgh Bridge & Iron Works, Rochester, Pa., that will have a capacity for punching at one time holes in four angles up to 8 x 8-in. and 95 ft. in length, and plates up to 8 ft. wide.

PERSONAL

W. H. Cadwallader, for 24 years connected with the Union Switch & Signal Company, Swissvale, Pittsburgh, has been made general manager of that company and assumed his new duties August 1. Mr. Cadwallader was born and raised in Wilkinsburg, Pa., and started

W. H. CADWALLADER

work about 25 years ago as an office boy for the Union Switch & Signal Company, working his way up to the position of assistant manager. He is highly regarded by the officials of his company, being a master of the details of its operations, and open-minded to suggestions from employees for the betterment of the service.

F. A. Geier, president Cincinnati Milling Machine Company, Cincinnati, Ohio; E. M. Chace, general superintendent of the same company, and August H. Teuchter, president Cincinnati-Bickford Tool Company, all sailed for New York on the Mauretania August 1. They were booked to return on the Imperator, but on account of the withdrawal of that boat from service were compelled to sail from England.

Buckner Wallingford, of the Walter-Wallingford Company, Cincinnati, Ohio, pig iron merchant, has returned home after a several weeks' business and pleasure trip to Europe.

Samuel S. Weber recently resigned as chief engineer of the Trenton, N. J., works of the American Steel & Wire Company, after 25 years' connection with the business.

E. G. Buckwell, secretary of the Cleveland Twist Drill Company, Cleveland, sailed for Europe on a business trip August 1.

W. K. Millholland, Jr., formerly chief designer with the Warner & Swasey Company, and more recently in charge of the Cleveland sales office of the Potter & Johnston Machine Company, is bringing out the Millholland automatic lathe at the plant of the Greaves-Klusman Tool Company, Cincinnati, Ohio.

Ernest Humbert, who has been abroad for some time in connection with electric furnace developments, was booked to sail from France August 8 on the steamship France, and expected to arrive in New York August 14.

H. P. Harding has been elected vice-president of the Canada-Carbide Sales Company and will be in charge of the Western territory, with headquarters in Chicago.

A. W. Tate and J. E. Touche, London, Eng., the two English directors of the Otis Steel Company, Cleveland, Ohio, the former being chairman of the board of directors, are spending a short time in Cleveland, having come on business in connection with the company and to inspect its new heavy sheet and light plate plant, which will be ready for operation about September 1.

William Welsh, for several years chief clerk of the traffic department of the Youngstown Sheet & Tube Company, has been appointed assistant traffic manager, effective August 18.

George P. Thomas, president Standard Bridge Tool Company, Pittsburgh, has returned from Europe.

Clarence M. Schwerin has been elected president and Warren Delano chairman of the executive committee of the Vinton Colliery Company, 1 Broadway, New York.

W. C. Shade has been appointed general manager of the Phoenix Iron Works Company, Meadville, Pa., in complete charge of its affairs, effective August 15. Mr. Schade resigned as president of the Cherry Tree Iron Works, Cherry Tree, Pa., in February of this year, but his resignation was not accepted owing to the inability of the company to find a suitable successor.

Western Engineers to Visit Ambridge

Officials of the American Bridge Company, Pittsburgh, Pa., have issued invitations to members of the Engineers' Society of Western Pennsylvania and friends to inspect on Saturday, August 8, the 1000-ft. arch span of the Hell Gate bridge, including the four end panels of one of the arch trusses, as completely assembled in the yards of the company at Ambridge, Pa.

This bridge is notable for the great size and weight of its chord sections. The heaviest members greatly exceed the maximum weight heretofore hoisted in bridge erection. The end bottom chord sections weigh 150 tons each as shipped from Ambridge (without splice or gusset plates). These bottom chords are 11 ft. deep, 7½ ft. wide and are made up of extra heavy sections, the web plates being 2 in. thick and other parts in proportion. Twenty special railroad cars have been built for transporting the heavy members of this bridge, since no railroad equipment of sufficient strength was available. The bridge is designed for a four-track railroad. No existing large span bridge is designed for four lines. The bridge is being built jointly by the Pennsylvania and the New York, New Haven & Hartford railroads and will carry trains direct from the West through to New England.

The Canadian Northern Railway Company has placed orders for equipment to cost over $1,500,000. The successful bidders were the Canada Car & Foundry Company, Hamilton, Ont.; National Steel Car Company; Crossen Car Company, Cobourg, Ont., and Preston Car & Coach Company, Preston, Ont.

Corrigan, McKinney & Co., Cleveland, Ohio, have placed orders with the Marshall Foundry Company and O'Neill Brothers Company, Pittsburgh, for stacks, flues, valves, etc., for their new open-hearth plant. About 1250 tons of castings will be required to fill these orders.

HEAVY FALL IN TRADE BALANCE

Underwood Tariff Increases Imports and Fails in Revenue Raising

WASHINGTON, D. C., August 4, 1914.—For the first time since the Underwood-Simmons tariff law went into effect it is possible to present official figures for a comprehensive fiscal period showing definitely the operation of the law, both with respect to our foreign commerce and as a revenue producer. Official statistics now available, covering the period from October 1, 1913, to June 30, 1914, embracing the first nine months under the new tariff act, make an exhibit that is discouraging to all who are interested in the development of American industries and discreditable to the framers of the law who pledged the country that it would produce ample revenue to meet the steadily increasing demands of the Federal government. The figures, taken in connection with the proven inadequacy of the income tax law, which has produced barely 50 per cent. of the estimated amount, indicate that the congratulations recently exchanged between high administration officials and the authors of the Underwood-Simmons act have been premature, to say the least.

The total foreign commerce during the first nine months' operation of the new tariff law aggregated $3,243,566,000. Of this amount the imports for the nine months ended June 30, 1914, were $1,446,127,000, as against $1,364,765,000 in the corresponding period a year ago, or an increase in imports of $82,000,000—at the rate of about $110,000,000 per annum. Free merchandise imported during the first nine months of the new law aggregated $893,602,000 forming 61.8 per cent. of the total imports, compared with 54.9 per cent. in the corresponding period of 1913.

LOSS IN MANUFACTURED EXPORTS

The export figures are more significant. The total shipments during the nine months of 1914 amounted to $1,797,439,000 as compared with $1,937,000,000 for the corresponding period of 1913, a loss for the nine months of about $140,000,000, or at the rate of more than $186,000,000 for the year. Although the administration officials declare that the decrease in exports was chiefly in foodstuffs, which they assert is "a reflection of the shortage in the domestic supply," nevertheless it appears that there was a falling off of more than $50,000,000 in the exports of partly manufactured goods and of $51,000,000 in the exports of finished manufactures. The decline, therefore, in the shipment of the products of our factories during the nine months aggregated $81,000,000, or at the rate of $108,000,000 per annum. Combining the gain in imports with the loss in exports it is seen that during the nine months under review we suffered a net loss in trade balance of about $222,000,000, or at the rate of nearly $300,000,000 per annum.

So much for the effect of the new law on the commerce of the country. Turning then to the subject of the revenue producing power of the Underwood-Simmons act, manufacturers will read with interest an official statement about to be promulgated by the Department of Commerce that "as a revenue producer the existing tariff compares favorably with other tariff laws enacted in the last 25 years." Continuing, this statement says: "Taking the monthly average customs receipts for the entire period in which the respective tariffs remained in force, it is found that the present law, while yielding somewhat less revenue than the Payne law, is slightly more remunerative than the Dingley law and one and a half times as productive as the McKinley and Wilson laws. The aggregate customs receipts during nine months under the Underwood tariff law were $206,473,502, or 23 millions per month; during 50 months under the Payne tariff, $1,335,000,000, or 26¾ millions per month; during 144 months under the Dingley tariff, $3,122,000,000, or 21¾ millions per month."

INADEQUATE AS A REVENUE RAISER

Obviously, comparisons dating back to the Wilson tariff of 1894 and the McKinley act of 1890 are valueless when it is remembered that the annual appropriations for the maintenance of the government have much more than doubled in the past 25 years. A reasonable comparison may be made, however, with the Payne and Dingley tariff laws. According to the figures presented in the official statement quoted, the Underwood act is producing about 1¼ million dollars per month in excess of the Dingley act and about 3¾ million dollars per month less than the Payne tariff. On their face these figures appear to be fairly creditable to the new law, but a slight analysis shows that the apparently good record of the Underwood-Simmons act is due solely to a legacy from the Payne-Aldrich law, which is already diminishing and which will be entirely wiped out during the next fiscal year. Of the revenues during the nine months ended June 30, 1914, no less than $40,000,000 was derived from the duty on sugar, which is soon to go on the free list, and about $700,000 to the duty on wool, which has been free since January 1 last. In other words, an average of 4½ million dollars per month of the revenue producing capacity of the Underwood act should properly be credited to the Payne-Aldrich law, so that when the provisions of the new tariff are fully in force its revenue producing power, instead of 23 million dollars per month, will be less than 18½ million dollars per month, or 3¼ million per month less than was realized under the Dingley tariff. Moreover, it went into force at a time when our annual expenditures aggregated less than $380,000,000, while for the fiscal year just ended they amounted to the enormous sum of $700,559,248.

EXTENT OF FUTURE DEFICIT

Deducting the sugar and wool duties for the entire fiscal year 1914, which aggregated about $65,700,000, an actual deficit of $31,916,000 appears for the year and emphasizes the failure of the income tax law, the actual receipts under which for the fiscal year aggregated $28,306,336, as compared with the lowest official estimate of $55,000,000. Representative Underwood, chairman of the Ways and Means Committee, has sought by specious calculations to break the force of this failure. In a statement which he has prepared for the Congressional Record he predicts that for the coming year the tax on individual incomes will exceed $60,000,000 which, together with the corporation tax of about $43,000,000, would produce a total of over $100,000,000. These figures, he says, will be realized "even if no more proportionately is collected than was collected this year." In support of this declaration Mr. Underwood says that "a large proportion of the income accrues and is payable in January and February of the year, but the income tax becomes operative in March," and he adds that "probably one-half of the dividends and coupon interest on bonds are payable in January and February of each year and, of course, they are not included in this year's returns of the income tax, hence it is fair to say that only one-half of the year has been available in which to collect the income tax." This statement will not stand a moment's examination. As a matter of fact, the income tax law, though not operative until March, 1913, and hence covering only ten months, as the schedules closed December 31, 1914, produced for the fiscal year 1914 very close to five-sixths of the receipts of a normal year. It is true the schedules for the past year did not include dividend and bond interest disbursements for January and February of 1913, but it is not true that, as stated by Mr. Underwood, "one-half of the dividends and coupon interest on bonds are payable in January and February of each year." It is a well-known fact that a very large proportion of railroad, industrial and other stock dividends are payable quarterly, while the semi-annual payments of interest on bonds are made on various dates, far less than one-half being due in January and February. Instead, therefore, of doubling the income tax collections during the fiscal year 1915, because the January and February disbursements of this year will be included, the gain probably will not exceed 20 or 25 per cent. or from $6,000,000 to $8,000,000. To offset this small gain there will be a heavy decline in customs receipts, due to the change in the wool and sugar duties.

W. L. C.

The Machinery Markets

Almost the entire interest of the machinery trade in all its branches is absorbed by the European situation which has effectually blocked exportations. It has also detracted attention from the freight rate decision handed down last week by the Interstate Commerce Commission which has long been awaited by the trade and which would at any other time be subject to minute analysis and have a powerful effect upon sentiment. As matters stand the decision is almost ignored. Under the circumstances there cannot be much betterment in domestic trade conditions. In New York the foreign situation seems to have stunned the domestic trade. In New England, as in New York, the European war has overwhelmed every other consideration, but only conjectures can be formed as to the ultimate effects. July was quieter in Detroit than the preceding month. Cincinnati has been hard hit by the stoppage of exports and domestic purchases are only made when urgently necessary. The feeling in Cleveland is that the war will not seriously affect domestic demand. Chicago believes that European influences cannot be otherwise than depressing, for the present at least. Conditions in the Central South are regarded as hopeful for the fall business, if they are not upset by the trouble abroad. Texas is dull and fear is expressed that the drop in the price of cotton will have a bad effect on purchases of machinery in the future. Business has been so quiet in St. Louis that further recession would be difficult and consequently the war cloud has had little effect except to cause new talk of caution. Business has improved but little in the Pacific Northwest, although a better feeling is noted in the logging and mill supply trade. Orders for metal-working tools are scarce and small.

New York

NEW YORK, August 5, 1914.

The adverse influence of the conditions in Europe, augmenting the quiet which already prevailed in the machinery trade in this city, has made the market absolutely flat. How long this condition will last is purely a matter of conjecture, but important houses are taking no chances on this point and already have ordered that the most rigid economy be practiced in their establishments from this time on. As described at greater length elsewhere in this issue of *The Iron Age*, the export business is at a standstill and imports likewise. Important as the recently rendered freight rate decision is to the trade and anxiously as it has been awaited, it has received almost no attention, has not been discussed and no effort has been made to measure its possible influence in causing the railroads to become more prolific purchasers.

The machinery and equipment of the Iron Clad Mfg. Company, 929 Flushing avenue, Brooklyn, N. Y., is to be disposed of at auction. The entire property was bought by an interest representing the creditors of the company with the consent of the United States District Court, and this interest has authorized W. B. Taylor, who is located at the plant, to sell at auction. He is circularizing for bids and the machinery will be sold in lots to the highest bidder. A catalogue has been prepared in which the equipment is described.

The plant of the Richardson & Boynton Company at Dover, N. J., which was damaged to the extent of about $500,000 recently, was not entirely destroyed as was reported in some cases. Manufacturing has been carried on continually at the plant ever since the fire. The contract for rebuilding has been let to the Lackawanna Bridge Company, 2 Rector street, New York City. Plans call for a foundry, 140 x 448 ft.; annealing and pattern shop, 60 x 300 ft., two stories, and a machine testing and mounting shop, 100 x 304 ft., two stories. It is expected that the works will be completed in three months. The company's New York office is at 31 West Thirty-first street.

The Interior Metal Mfg. Company, 65-85 River street, Jamestown, N. Y., manufacturer of interior metal fittings, has not yet determined upon the mechanical equipment for its new factory, the superstructure of which will be completed about September 15 and will provide about 17,000 sq. ft. of floor space available for manufacturing. It is in the market at present for platform scales of one-ton capacity and not less than 6 ft. square platform, a 10-hp. alternate current motor, both line shaft drive and individual machine motor drive equipment. O. M. Otte is general manager.

The city of Milltown, N. J., has authorized the sale of $42,000 of water bonds.

James F. Marshall, Vineland, N. Y., borough engineer, has received bids for a one-story brick and iron power plant, 25 x 45 ft.

Kelly & McLaughlin, 91-103 Colden street, Newark, N. J., manufacturer of carriage and furniture leather, etc., have purchased the factory adjoining their plant and will alter it to increase their manufacturing facilities.

The Martin Cantine Company, Saugerties, N. Y., manufacturer of lithograph plate, etc., is building a factory for the Tissue Company, manufacturer of crepe paper, which originally occupied a factory of the former company, recently burned. Martin Cantine is president.

The Auburn Woolen Mills, Auburn, N. Y., has awarded contract for construction of a new mill building to the B. F. Smith Company, Pawtucket, R. I.

G. Sanford & Sons, Gloversville, N. Y., have let contract for a 60 x 100 ft. 1-story addition to their carpet manufacturing plant.

The General Electric Company, Schenectady, N. Y., has completed plans for three additional factory buildings, to be 48 x 145 ft., one story; 40 x 90 ft., one story, and 14 x 220 ft., two stories.

The Commercial Elevator Company, Lunham & Moore, agents, Chamber of Commerce Building, Buffalo, is having plans prepared for a grain elevator to be erected at the foot of Michigan street on the outer harbor, Buffalo, at an estimated cost of $450,000.

Incorporation papers have been filed by Clayton W. Hull & Sons, Binghamton, N. Y., who will establish a sheet metal works. Clayton W., Harry N. and Jesse C. Hull are the incorporators.

The Buffalo Packing Company, Babcock street and the Erie Railroad, Buffalo, is building an addition to its plant.

Enlargements and improvements are being made to the Reynolds-Chalau Foundry, on Second street, Troy, N. Y. James Hislop, of that city, is the owner.

Bids are being taken until August 24 by the Custodian of the United States Court House and Post Office, Rochester, N. Y., for ventilating apparatus to be installed in the building.

The Board of Public Works, Albion, N. Y., has been authorized to purchase the plant of the Albion Water Company and to expend approximately $65,000 for improvements.

Improvements and repairs to cost $7500 are to be made to the municipal electric light plant, Westfield, N. Y.

The Federal Lighting Fixture Company, Buffalo, has been incorporated to manufacture electrical supplies. J. G. and J. T. Irr and J. M. Morrell are the directors.

Catalogues Wanted

John J. O'Rorke, secretary of the Compressed Gas Manufacturers' Association, 25 Madison avenue, New York City, requests that all manufacturers of valves, cylinders, recording gauges, filling and weighing stands and all materials and appliances which enter into the manufacture, transportation and sale of compressed gases, regularly mail to him all catalogues and price lists, together with full descriptive details, as soon as they are issued.

New England

BOSTON, MASS., August 4, 1914.

The European war has overwhelmed every other consideration as to the future of the machinery trade. The manufacturers and dealers are utterly bewildered. No one has any positive opinion to express. Even the most aggressive thinkers assert frankly that their minds are filled with chaotic conjecture. The one really understandable fact is that practically all shipments of machinery to fill orders from Europe have been ordered delayed, in some cases by cable from representatives abroad and in more cases by word from the shipping agents. It will be some time, perhaps, before it can be known how much of this large volume of business has been absolutely cancelled.

The additional building which is being erected by the Chapin-Stephens Company, Pine Meadow, Conn., will be used to house the machinery purchased with the business of the Elmore Tool Mfg. Company, Hartford, Conn. The Chapin-Stephens Company will continue the manufacture of the Elmore products, which comprise a large variety of small tools, such as screwdrivers, awls, bits and gimlets, various types of chisels, etc. The line will supplement that already made at Pine Meadow, including rules, planes, gauges, plumbs and levels, handscrews, files, etc. The new building will be 40 x 122 ft.

The building which the Old Town Canoe Company, Old Town, Maine, will erect will be 38 x 300 ft., with boiler house extension 30 x 45 ft. Very little equipment will be installed outside of heating and sprinkler systems.

The new factory of the Manufacturers' Box Company, Auburn, Maine, will be 100 ft. square, three stories.

Landers, Frary & Clark, Inc., New Britain, Conn., manufacturer of hardware specialties, has taken out building permits for three structures, one 24 x 126 ft., two stories and basement; another 39 x 123 ft., one story, and the third, 29 x 39 ft., one story.

The Dane Machine Company, Salem, Mass., will replace the building destroyed in the fire by a reinforced concrete factory.

Means & Thatcher, Inc., Quincy, Mass., will erect a three-story factory.

The United States Oxygen Company, with offices at 216 East Forty-second street, New York City, which is financed by English capital, proposes to erect two factory buildings on Orleans street, East Boston.

Referring to the additions and improvements which will be made by the Phillips Insulated Wire Company, Pawtucket, R. I., the company states that it has no details to give out concerning new equipment that will be required. A factory building will be about 200 ft. square, and there will be a large power house, the equipment of which has already been contracted for.

The Billings & Spencer Company, Hartford, Conn., manufacturer of machinists' tools, drop forgings and forging machinery, states that it has no intention of getting into its new plant, formerly occupied by the Columbia Motor Company, for some months to come, and consequently is not yet prepared to make announcement as to its plans for the great buildings.

The New Haven Screw Company, New Haven, Conn., recently incorporated with a Connecticut charter, has purchased from the receiver the business of the New Haven Machine Screw Company, together with the equipment, and will continue the business, giving special attention to the manufacture of special screw machine products. The organization consists of former heads of departments of the Universal Machine Screw Company, the business of which was taken over by the American Corbin Screw Division of the American Hardware Corporation, New Britain, Conn., and the machines of which are now built by the New Britain Machine Company of the same city. Pierpont Foster is president; F. A. Bartlett, secretary, and L. G. Richardson, treasurer. The equipment consists of about 25 automatic multiple spindle machines, mostly Gridleys. The company has a paid in capital of $50,000.

The N. B. Cass Company, Athol, Mass., manufacturer of toys, states that it is not yet ready to give out the details of new equipment that will be required for its enlarged plant.

C. J. Bates & Son, Chester, Conn., manufacturers of manicure implements and cutlery, are erecting a two-story addition, 30 x 70 ft., and a one-story forge shop 25 x 25 ft. The addition has been incorrectly stated as 20 x 30 ft.

The Ball & Roller Bearing Company, Danbury, Conn., manufacturer of ball and roller bearings, which has been conducted as a firm for six years, has been incorporated under a Connecticut charter.

Philadelphia

PHILADELPHIA, PA., August 4, 1914.

Sauer & Hahn, 1112 Chestnut street, Philadelphia, are the architects for a two-story and basement store and manufacturing loft for H. F. Marks, 1309 Vine street.

Charles Bolton & Sons, Witherspoon Building, Philadelphia, are architects for a two-story factory, 60 x 80 ft., being erected at Thompson and Cumberland streets for the Abbott Estate, Broad and Race streets, Philadelphia.

The Fairmount Electric & Mfg. Company, 2203 Pearl street, Philadelphia, Pa., is building a two-story brick factory, 45 x 100 ft., to cost $5000. It will be used for the manufacture of electrical appliances. Harry Parker, Drexel Building, Philadelphia, is the architect.

The Mount Sinai Hospital, Fifth and Wilder streets, Philadelphia, is building a brick and concrete boiler house and garage, 40 x 40 ft., two stories. Magaziner & Potter, 603 Chestnut street, Philadelphia, are the architects.

The Pennsylvania Lock & Hardware Company, Columbia, Pa., manufacturer of padlocks, night latches and staple hardware, will be in the market for foundry equipment, molding machines, stamping presses, japan ovens, core ovens, engine shafting, belting and polishing stands, and a nickel and brass plating outfit.

The National Skein Dyeing Machinery Company, Hunsicker Building, Allentown, Pa., has been incorporated by Ernest DeJourno and others, to manufacture a patented skein dyeing machine, etc.

Chicago

CHICAGO, ILL., August 3, 1914.

Although machinery manufacturers at Chicago are not so much concerned with the export situation as are those nearer the seaboard, all of the local interests have received advices from their European connections to suspend shipments indefinitely. These instructions have affected a few consignments now at New York, and will apply to a few small shipments in transit to that point, but fortunately there seems to be at this time no machinery on the water. Just what the credit situation will develop is of course unknown, and thus far concern regarding outstanding indebtedness lacks any very tangible basis. Opinion differs as to the effect upon the volume of trade in the long run; but in the immediate present, European influence cannot be otherwise than depressing. It is to be expected that American manufacturers of machinery will endeavor to stimulate the domestic demand to offset the decrease in foreign business and active campaigns in the home market seem probable.

Simm McCarthy, Bower & Co., Chicago, have incorporated with a capital stock of $2500 to deal in machinery, machinists' supplies, etc. The incorporators are Benjamin Levering, 38 South Dearborn street, William F. McCarthy and Hans Von Reinsperg.

The Sundstrom Mfg. Company, Chicago, has been incorporated with a capital stock of $2500 by Gabriel E. Sundstrom, Erick W. Andreason and John Sundstrom to manufacture tools and special machinery, to do metal stamping, etc.

The Economy Pumping Machinery Company, Chicago, has been incorporated with a capital stock of $10,000, to manufacture and deal in pumping machinery, accessories and parts thereof, etc. The incorporators are Peter J. Johnson, Robert H. Stoll and Frederick L. Brooks. John Taylor Boyd, 825 First National Bank Building, is the attorney for the company.

The Chicago Gear Mfg. Company, Chicago, has increased its capital stock from $10,000 to $30,000.

North Chicago Foundry, North Chicago, Ill., has increased its capital stock from $30,000 to $40,000.

Gardiner Storage Battery Company, Chicago, has increased its capital stock from $12,000 to $30,000 and its directors from three to five.

Durametal Weatherstrip Company, Chicago, has increased its capital stock from $10,000 to $25,000.

The William J. Casey Company, Chicago, has been incorporated with a capital stock of $10,000 by Alfred M. Bays, 25 North Dearborn street; Charles A. Ruth and W. L. Thompson to manufacture screw machine products.

M. T. Rudgren, city clerk, Rock Island, Ill., will receive bids until 2 p. m., Aug. 12, for a centrifugal pumping unit to consist of a two-stage pump, condensing steam turbine, or two-phase, 60-cycle, 4800-volt motor, or fuel oil machine.

The Flanders Mfg. Company, Pueblo, Colo., has been incorporated with a capital stock of $100,000 by Thomas C. Davis, Max Flanders and Leslie Kiffer. It will at once construct a factory for the manufacture of mechanical products.

The Purity Ice & Refrigerating Company, Highland Park, Ill., has been incorporated with a capital stock of $40,000 by John A. Raabe, Edward F. Stuenkel and Charles G. Rosenow to equip an ice plant.

The city of Cumberland, Iowa, has voted $5000 of bonds for waterworks improvements.

The city of Alton, Kan., will receive bids until Aug. 6 for a 7 x 8 triplex pump, etc. Rollins & Co., Kansas City, Mo., are the engineers.

Harold G. Cook Company, Minneapolis, Minn., has been incorporated with a capital stock of $10,000 by Harold G. Cook, Harry Smead and Russell Smith to do a general machinery business.

Sealed bids will be received by the village council, Pennock, Minn., until 8 p. m., August 12, for the erection of a pumping station and engine, etc.

Indianapolis

INDIANAPOLIS, IND., August 3, 1914.

The Ogden Fiber Gear & Tire Company has been incorporated at Columbus, Ind., to manufacture auto parts. The directors are D. Ogden, L. E. and Hubert S. Ogden.

The General Insulating & Mfg. Company, Alexandria, Ind., has been incorporated with $100,000 capital stock, to manufacture electrical supplies. The directors are Louis A. Cella, Charles J. Cella and Joseph E. Martin.

The Hydro-Electric Company, Connersville, Ind., has been authorized by the Indiana Public Service Commission to issue $100,000 in preferred stock.

The Morris-Jones-Brown Mfg. Company, Indianapolis, has been incorporated with $60,000 capital stock to manufacture excelsior and wood wool. The directors are G. B. Morris, H. J. Jones and D. M. Brown.

The Hytees Factories, Indianapolis, has been incorporated with $10,000 capital stock to do a manufacturing business. The directors are A. M. Smith, R. T. McFall and M. W. Hopkins.

The car repair shops of Swift & Co., Elkhart, Ind., and twenty stock cars were destroyed by fire. The loss is placed at $50,000.

The Koons Oil Furnace Company, Anderson, Ind., has been reorganized and the name changed to the Koons Furnace Company.

Detroit

DETROIT, MICH., August 3, 1914.

July was a quiet month in the local machinery market and the totals of business transactions show a decrease from those of June. The past week has been a dull one in most lines of machine tools and dealers report only small transactions. Some business was done in special equipment but little of this was of interest to local merchants. Inquiries are, however, substantially better and indicate a broadening of the market, those for wood-working equipment being especially attractive. The second-hand machinery market exhibits little life, as has been the case for several weeks. The general industrial situation remains practically unchanged, although there are isolated instances of greater operating activities. New building projects are relatively unimportant.

Dodge Brothers, Detroit, are rapidly completing their new buildings which are to be used in the manufacture of automobiles. They will be devoted to manufacturing and assembling purposes and will represent with their equipment an investment of close to $1,000,000.

To provide for increasing business, the Fisher Body Company, Detroit, has acquired a five-story building with 100,000 sq. ft. of floor space at Forest and Grandy avenues, for use as an additional unit to its present plants. It is being equipped for automobile body production.

The Detroit Gear & Machine Company, Detroit, gear manufacturer, is having plans prepared for a one-story addition to its plant.

The Detroit Fuel Generator Company, Detroit, has been incorporated with $10,000 capital stock to manufacture ignition devices. Herbert H. Parsons and John M. Kearney are the principal stockholders.

The Detroit Insulated Wire Company, Detroit, Mich., has increased its capital stock from $100,000 to $500,000.

The Gordon-Pagel Company, Detroit, baker, will erect a two-story addition to its present plant, to be used for manufacturing purposes.

The Machinery Sales Company, Detroit, has increased its capital stock from $3000 to $15,000 to provide for increasing business.

The Fenn Mfg. Company, Charlotte, Mich., following a reorganization, is erecting a factory building, 154 x 154 ft., one story. The company manufactures small agricultural tools.

George H. Folger & Son, Grand Rapids, Mich., machinists and patternmakers, have acquired a factory and will enlarge it by the erection of a two-story addition, 33 x 55 ft.

The Wilson Foundry & Machine Company, Pontiac, Mich., has been incorporated with $400,000 capital stock by C. B. Wilson, H. R. Wilson and C. E. Killinger. Part of the plant formerly occupied by the Flanders Mfg. Company will be used by the new company in the manufacture of gray-iron castings. No equipment will be required at present.

The Michigan State Railroad Commission has authorized a bond issue of $3,300,000 by the Detroit, Pontiac & Owosso Railway Company, which was recently organized with $50,000 capital stock by a syndicate headed by Oliver Lau, Detroit. The new company proposes to build and operate an electric railway from Pontiac to Owosso.

The Holihan Mfg. Company, Twenty-first street and West Jefferson avenue, Detroit, Mich., is building a factory 80 x 210 ft., instead of 80 x 120 ft., as has been stated.

The National Bedspring Mfg. Company, Detroit, has been incorporated with $6000 capital stock to manufacture bed springs. The incorporators are Leon Marcus, Jacob Marcus and Herbert Cohn.

Cleveland

CLEVELAND, OHIO, August 3, 1914.

The war situation is attracting the close attention of local machinery builders, especially those builders of machine tools who do an export business. There has been a fair volume of such business recently and while it is expected to remain temporarily at a standstill as regards further orders, machine-tool men believe that a prolonged war involving several nations will stimulate the demand for machinery. However, considerable doubt is expressed as to whether American machinery builders would benefit very much by a heavier foreign demand, because of the trouble they would probably have in getting shipments through to Europe. The general feeling is that a foreign war will not affect the domestic demand for machinery.

Conditions locally show little change. Dealers are doing a light volume of business, almost entirely in single tools, and do not look for an improvement before fall. Some manufacturers report an improvement in domestic orders. The demand for punching and shearing machinery and for drilling machinery appears to have improved somewhat.

The Horsburgh & Scott Company, Cleveland, announces that the growth of its business has made necessary an enlargement of its plant. The company has under way a three-story brick and steel building, 40 x 120 ft. Some heavy gear cutters and other machinery and a 10-ton crane will be installed. The addition will give the company more than double its present capacity in gears and pinions. When the addition is completed it will be able to make gears up to 10 ft. in diameter. The largest size it makes at present is 8 ft. in diameter.

The Johnston-Jennings Company, Cleveland, will enlarge its forge shop by the erection of an addition, 45 x 90 ft. Some new equipment will be installed.

The Warren Stamping Company, Warren, Ohio, has been incorporated with a capital stock of $50,000 to engage in the manufacture of metal stampings. J. G. Gates, Charles Myers, B. C. Baxter, and others, are incorporators.

The city of Spencerville, Ohio, has voted $10,000 in bonds for rebuilding the municipal electric lighting plant.

The city of Delta, Ohio, will receive bids until noon August 10 for the extension of its waterworks plant. A. G. Thomson is village clerk.

The Roberts-Toledo Auto Company, Toledo, Ohio, will erect a three-story steel, brick and concrete building, 100 x 100 ft., at Adams and Thirteenth streets, to be used for automobile repair, supply and display rooms.

The Cleveland Clutch Company, Ravenna, Ohio, has been placed in the hands of a receiver.

The plant of the Davies Mfg. Company, Akron, Ohio, was burned a few days ago. The machinery and other contents were practically a total loss. The company expects to resume operations shortly in a new location.

The city of Akron will receive bids August 11 for a sewage plant, including pumps and pump house. R. W. Pratt, Cleveland, is the consulting engineer.

Cincinnati

CINCINNATI, OHIO, August 3, 1914.

European war troubles have completely paralyzed the export trade in machinery to Europe. A number of cancellations are reported, and local machine-tool builders have received instructions to hold up all shipments. A number of machine tools are en route that will have to be held in New York or disposed of elsewhere. With the exception of the Latin-American business, which is limited, no export orders have been received from any source, except one from Spain, that came in last week, calling for a number of drilling and milling machines. So far, the war scare has not affected domestic business, due probably to the fact that there is so little of this business. Purchases of all kinds of machinery are only being made in emergency

cases; neither the railroads nor the automobile manufacturers are buying any tools except for replacement purposes, and then only when urgently needed.

Manufacturers of wood-working equipment have also suffered, numerous cancellations being reported, except from the South American trade. It is the announced intention of many manufacturers to make a special effort to wrest the trade in South and Central American markets from German and English competition, and preparations have already been begun along this line. Refrigerating machinery is holding its own fairly well, and this also applies to the smaller units of electric equipment.

The Union Thread Company, Carthage-Cincinnati, Ohio, has let the contract for an addition to its plant that will be 25 x 40 ft., one-story, of brick construction. Nothing has been given out as to machinery requirements.

The Sheriff Preserve Company, 123 East Pearl street, Cincinnati, will make an addition to its boiler house, for which some equipment will be required.

The J. A. Fay & Eagan Company, Cincinnati, has acquired the foundry of the Mowry Car Wheel Company, on Eastern avenue, and will fit it up at an early date.

The Donaldson Lithograph Company, Newport, Ky., has had plans prepared for an addition to its plant estimated to cost $50,000. Only special machinery will be required.

The city of Hamilton, Ohio, is planning to spend $55,000 for extra equipment to be installed in the municipal electric lighting and power plant.

The Electrolytic Oxygen Company, Cincinnati, recently incorporated, will erect a plant at the corner of Kenyon avenue and Baymiller street. Practically all equipment has been provided for.

The Western Foundry Company, Springfield, Ohio, recently incorporated, with John Howell as president, has leased the new foundry of the Duplex Mfg. Company, on Zigler street.

The binder twine factory of J. C. Groendye, Miamisburg, Ohio, was partially destroyed by fire July 27, the estimated loss being $50,000. The factory will be rebuilt at once.

The Doty Mfg. Company, Dayton, Ohio, has increased its capital stock from $10,000 to $100,000, and will add to its manufacturing facilities. The company manufactures vacuum cleaners and other specialties.

The Barney & Smith Car Company, Dayton, Ohio, announces that it has received an order for 500 freight cars from the New York Central Railroad Company. It is expected that the receivership of this company will be lifted at an early date, when additions to its plant are planned.

The Wellington Flour Mills Company, Wellington, Ohio, has been incorporated with $25,000 capital stock to erect a flour mill. Lewis O. Bradstock is one of the incorporators.

C. C. Henry, Xenia, Ohio, is interested in a company being formed to erect a foundry.

The American Fixture & Mfg. Company, Troy, Ohio, intends to enlarge its plant at an early date. No details are available as to machinery requirements.

The Galesburg Writing Machine Company, Galesburg, Ill., has acquired a factory at Springfield, Ohio, and will soon move its plant there.

The Foley & Robbinett Company, Circleville, Ohio, recently incorporated, expects to operate a small furniture factory.

August D. Cook, Greendale, Ind., is president of a company recently formed to erect a small waterworks to supply that municipality. The cost of the proposed plant is estimated at $75,000.

Wheeling

WHEELING, W. VA., August 3, 1914.

George W. Stevens, president of the Chesapeake & Ohio Railroad, announces that the car shops at Huntington, W. Va., will be enlarged and additional machinery installed.

The Clarksburg Gas & Electric Company is rebuilding the plant destroyed by fire at Clarksburg, W. Va., and will be ready for the machinery about October 15. Sydney B. Martin is in charge of the mechanical engineering. Plans call for a 2000-kw. plant, and it is so designed that it may be doubled in the near future.

The plant of the Midland Mfg. Company at Morgantown, W. Va., was sold for $5000 to J. L. Keener, representing the preferred creditors. The property includes a site of two acres, equipment, etc., and complete stock of supplies for manufacture of 150 motorcycles.

The Beaver Coal & Timber Company, Richwood, W. Va., has been incorporated with $100,000 capital stock by V. H. Odell, Richwood; E. T. Crawford, Charleston, and others.

The American Powder Grain Company, Elkins, W. Va., has been incorporated with $10,000 capital stock to engage in the manufacture of gunpowder by J. E. Morris, Lee Crouch, R. B. Isner, and others.

The Wheeling Corrugating Company will construct a chemical plant that will cover two acres at its plant at Martin's Ferry, Ohio. It will be fire-proof and will be used in extracting the iron-sulphates and acid from the chemicals taken from the pickling pots.

The Central South

LOUISVILLE, KY., August 3, 1914.

Trade conditions have not changed materially the past week, though the general situation is reported satisfactory. Prospects continue plentiful, and the outlook for the fall, assuming that general conditions are not upset by the war scare, is improving steadily. Power equipment is probably the leading item at present, boiler men having had a good demand, though electrical equipment houses report that buyers are holding off in most instances. Gas engine concerns have been active locally of late on account of the prospects of many industrial concerns adopting that form of power because of the cheapness of natural gas, which recently became available here. The demand is reported good for machine tools, especially by concerns offering direct connected motor-driven equipment.

Work has begun on the new factory building of the Axton-Fisher Tobacco Company, Louisville, which is in the market for power machinery and special equipment. Address Wood F. Axton.

The Benzole Garment Cleaning Company, Louisville, will build and equip a plant to cost $15,000. Power machinery will be purchased. C. P. Harding is in charge.

The S. & P. Supply House, Louisville, which will operate a moving picture supply business, is arranging to establish a machine shop for the repair of film equipment. A lathe, drill press, motor, etc., will be needed. Fred Sheldon, Courier-Journal Building, Louisville, should be addressed.

The Kentucky Corrugated Paper Company Louisville, which is preparing to move into a new factory, is considering the installation of a gas engine.

The town of Olive Hill, Ky., has created an electric light franchise, which will be sold at public auction. A local company will purchase the privilege and build a plant, it is reported. H. G. Hicks is mayor.

Polley & Justice, Pikeville, Ky., will install a handmill.

The Carrollton Furniture Mfg. Company, Carrollton, Ky., which has increased its capitalization from $125,000 to $200,000, is reported to have plans for substantially increasing the capacity of its plant.

Claude Orr and A. E. Roane, Hazel, Ky., have purchased a water franchise and will install a plant.

Asa P. Prather and others, Georgetown, Ky., are equipping a factory for the manufacture of a patented automobile wheel.

The Chandler Normal School, Lexington, Ky., which as recently reported will equip a manual training school, will conduct wood-working, plumbing and printing departments, and will need tools and machinery for these classes of work. F. J. Werking is the principal.

The Harriman Shuttle Block Company, Harriman, Tenn., is planning the establishment of a branch mill at Scottsville, Ky.

The Letz Jellico Coal Company, Williamsburg, Ky., has been organized with $100,000 capitalization and will develop a coal property at Wofford, Ky. Bids on the machinery, which will be sufficient to handle 800 tons a day, will be opened August 15. J. Robert Zimmerman is manager.

Joseph Grubb, Big Spring, Tenn., will build a cotton gin for which a boiler, presses and other equipment will be needed.

Power equipment and hydraulic presses will be required by the Ramer Gin Company, Ramer, Tenn., which is rebuilding its plant, recently burned.

C. E. Crook, Newport, Ark., has completed plans for a brick garage for which machine tools will be needed.

A motor-driven pump will be purchased by the city of Nashville, Tenn., but a new ordinance making an appropriation of $2900 or more will have to be enacted. The first measure provided funds of $1200, which proved to be insufficient for the purpose.

William S. Whiting, Asheville, N. C., who operates a

hardwood flooring factory at Elizabethton, Tenn., plans to double it in size and capacity. The business will be known hereafter as the Elizabethton Flooring Company.

The Dayton Veneer & Packing Company, Dayton, Tenn., has been organized with $15,000 capital stock, and will establish a crate and basket factory. T. W. Caudle is president.

The Appalachian Mills, Knoxville, Tenn., is constructing two knitting factories, which will be equipped with power and special machinery costing $100,000. M. D. Arnold is president.

The Nashville Boat Mfg. Company, Nashville, Tenn., has begun operation in a factory at 3905 Elkins avenue, and will manufacture canoes and launches. Additional equipment will be needed later on. M. A. Duncan is president.

St. Louis

ST. LOUIS, MO., August 3, 1914.

The foreign war alarm has developed new talk of caution, but it cannot be said to have had a very material effect on actual business as that has been at such a low ebb in recent weeks as to render further recession almost impossible. Indeed, something of an increase is perceived and tentative inquiry continues to develop indications of more within a short time. The effect of crop harvesting has been good and the money supply for the fall and winter will undoubtedly be equal to any demand made upon it for extensions, new enterprises, etc. Second-hand tools are not active. Collections are prompt.

The Superior Oxygen Company, St. Louis, acting through the Rutledge & Kilpatrick Realty Company, is erecting a plant for the manufacture of oxygen for use in welding, etc. Equipment to cost $60,000 will be installed.

The St. Charles Motor Truck Company, St. Charles, Mo., has been incorporated with a capital stock of $150,000 by W. F. Breedlove, C. E. Tillman, and others, to manufacture motor trucks.

The A. P. Bohlinger Table Company, St. Louis, will rebuild its wood-working plant, recently burned with $25,000 loss.

An electric light plant and an ice plant will be equipped at Hopkins, Mo., by D. A. Dalbey, Grant City, Mo. The estimated cost of equipment is $10,000.

O. L. Wright and G. E. Weaver, Walnut, Kan., will build an electric plant at Pattonsburg, Mo.

Electric light plants will be equipped at Montrose, Mo., and Monett, Mo. The mayor should be addressed in each case.

The National Spring Wheel Company, St. Joseph, Mo., has been incorporated by W. L. Mann, W. P. Justice and E. J. Keathley and will equip a factory to manufacture a metal spring wheel for motor cars, etc. The investment will total $100,000.

The city of Jamestown, Mo., will equip a waterworks plant to cost $14,000. The mayor should be addressed.

The cotton gin of J. M. Clem & Sons, Malvern, Ark., recently burned, will be re-equipped at once.

The Co-operative Canning & Storage Company, Leslie, Ark., has been incorporated with a capital stock of $50,000 by E. Mays, A. C. Edwards and L. B. Bonner and will equip a canning and evaporating factory with ice-making machinery, etc.

The Lavaca Gin Company, Lavaca, Ark., of which J. A. Ray is president will equip a ginnery of 400-bales capacity a day. A corn and feed mill will also be operated.

A cotton gin of 100-bales daily capacity will be equipped at Tillar, Ark., by Peter Sains and Archie Prewitt.

The Planters Gin & Mercantile Company, Lepanto, Ark., of which W. E. Pritchett is president, will open bids September 15 for equipment, etc.

The Bear State Power & Development Company, Mena, Ark., has been incorporated with a capital stock of $25,000 by G. D. Thayer, J. W. Bradley and Minor Pipkin to equip an electric light and power plant.

The McGehee-Smith Lumber Company, Pine Bluff, Ark., will re-equip its plant, recently burned, installing electrically operated machinery to cost about $15,000.

Water Improvement District No. 2, Paragould, Ark., of which H. L. Donaldson is secretary, will add equipment to its present plant.

A wood-working factory is to be equipped by the Chicago Mill & Lumber Company, Helena, Ark.

The Dixie Canner Company, Little Rock, Ark., is in the market for boilers and other power equipment.

The city commissioners of Enid, Okla., will increase the capacity of the local waterworks plant, expending about $6000 for machinery.

The municipal electric light plant at Wesson, Miss., which was wrecked by an explosion, will be rebuilt. Dabbs & Wetmore, Meridian, Miss., are in charge.

The Meridian Fertilizer Company, Meridian, Miss., will remodel its plant and add equipment to cost about $7000. T. M. Thames is general superintendent.

The Phoenix Planing Mill, Moss Point, Miss., will be remodelled to handle 10,000 ft. of dressed pine lumber per day. W. H. McInnis and Jesse W. Thompson are new owners.

The Hattiesburg Wood Reduction Company, Hattiesburg, Miss., has increased its capital stock from $100,000 to $125,000 and will increase the capacity of its refining plant.

The Vivian Light & Power Company, Vivian, Miss., will equip an electric plant to cost about $15,000.

An electric light plant to cost $10,000 will be installed at Winnsboro, La., by Carl Shipp. A power plant of 50-hp. capacity will be the initial unit, including oil-burning engine, generator, etc.

The Eureka Water Motor Company, New Orleans, La., has been incorporated with a capital stock of $10,000 by J. B. Rochelle, E. J. Ernst and N. B. Ernst to manufacture motors.

The Sweet Home Lumber Company, Ball, La., will rebuild its plant, recently burned with a loss of $90,000.

The Edward L. Davis Lumber Company, New Orleans, La., has been incorporated with a capital stock of $100,000 and will build a factory.

The Louisiana & Arkansas Railway, of which F. W. Green, Stamps, Ark., is general manager, will equip repair shops at Jonesville, La.

The Cowgill Hardware & Implement Company, Cowgill, Mo., has been incorporated with a capital stock of $12,500 by S. F. Thompson, O. T. Cramer and J. W. Meyers.

Texas

AUSTIN, TEXAS, August 1, 1914.

Unusual dullness pervades the machinery and tool trade. Little was done in the way of selling new machinery the past week. Most of the cotton gins for operation during the new crop have been constructed. From the number of inquiries which dealers are receiving in regard to irrigation pumping plants, a large trade in that line is expected this fall. Railroad construction throughout the State is at a standstill and to here is no prospect for an early resumption. Protracted hot, dry weather is damaging the cotton crop considerably. War in Europe would cause a big drop in the price of the staple and this possibility is causing some depression in business here.

The Pioneer Flour Mills, San Antonio, will remodel its plant at a cost of $80,000.

The Redville Gin Company, San Gabriel, will construct a cotton gin. J. B. Wilson is one of the proprietors.

The Farmers' and Merchants' Gin Company, Princeton, is preparing to construct a cotton gin. W. E. Bowen is interested.

The El Campo Cotton Oil Company, El Campo, which has a capital stock of $50,000, will construct a cotton-seed oil mill. J. E. Broussard, R. H. Hancock and D. P. Redwine are among the owners.

White lead works will be established at Dallas by the Detroit White Lead Works of Texas. A. D. Joyce is a leading factor in the enterprise.

The Emmert Machine & Auto Company, Houston, has been organized for the purpose of establishing machine and repair shops. August Emmert is one of the principals.

The Aztec Irrigation Company, Aztec, N. M., has taken over the holdings of the Inca Canal Company and will extend its irrigation system so as to provide a water supply for 22,000 acres of land.

The Pacific Northwest

SEATTLE, WASH., July 28, 1914.

A somewhat better feeling is noted in the logging and mill supply trade, but the actual volume of business done shows little if any improvement. Orders for metal working tools are scarce and for the most part small, and few of the more important buyers are in the market at present. The demand for miscellaneous equipment is increasing somewhat, with encouraging indications. The export grain movement is actively under way, and flour mills are preparing for a

busy season. Export shipments of machinery passing through north Pacific ports are large, consisting mostly of electrical, mill and mining equipment for Japan and implements for Siberia and Manchuria. The Alaskan trade is also a factor of considerable importance at present.

The Watrous Machinery Company, Spokane, has been incorporated with a capital stock of $10,000 by C. B. Watrous and others.

The Government Powder Company, Seattle, capitalized at $500,000, was recently incorporated by R. B. Owens, John L. Donner and Charles H. Libby.

Articles of incorporation have been filed for the Metal Showcase & Fixture Company, Portland, Ore., with a capital stock of $10,000. Henry H. Wright and others are the incorporators. The company plans the erection of a factory.

The General Machinery Company, Spokane, Wash., has recently contracted with the Washington Water Power Company for the purchase of all the second-hand machinery and equipment used by the latter in the construction of the Long Lake dam and power house. The purchase price is $190,000.

The plant of the Hillsboro Power & Investment Company, of Hillsboro, Ore., was damaged by fire recently to the extent of $15,000. H. V. Gates is manager of the company.

The city comptroller of Seattle will receive bids until September 5 for the purchase of $404,000 worth of bonds, the proceeds to be used in the construction of an auxiliary steam plant.

The equipment of the new power plant of the Oregon-Washington Corporation, Kalama, Wash., was badly damaged recently, when a large turbine got beyond control, two of the wheels exploding.

The Panama Eastern Lumber Company, Hoquiam, Wash., according to statements of its officers, will start work soon on the construction of a large lumber and shingle mill.

S. A. Buck, Monroe, Ore., will erect a box and crate factory in Eugene, Ore.

J. L. Keeler, Sequim, Wash. states that he will soon begin the construction of a steam heating and electric plant to supply the city of Sequim and surrounding territory.

John F. Murphy, city clerk, Ft. Benton, Mont., will receive bids until August 17 for the purchase of a $17,000 bond issue, the proceeds to be used in the construction or purchase of a municipal electric light plant for this city.

The city of Bovill, Idaho, has voted a bond issue of $12,000, the proceeds to be used in constructing a waterworks system.

The Seattle Port Commission will receive bids until August 13 for furnishing and installing refrigerating equipment in its cold storage warehouse.

The Algunican Development Company, Juneau, Alaska, recently awarded contracts for a number of buildings, including machine shop, blacksmith shop, etc. Contract has also been let for a concentrating mill with a capacity of 200 tons of ore per day, which is the first unit of a plant that, when completed, will have a capacity of 1000 tons.

The Western Lumber & Millwork Company, Tacoma, Wash., has been incorporated with a capital stock of $25,000 by H. P. Edward and others. It plans the immediate erection of a wood-working plant.

The Port Commission, Astoria, Ore., will take bids shortly for a coal handling system for the municipal docks. All machinery will be electrically operated. It will have a loading capacity of 250 tons per hour.

The Okanogan Valley Electric Company, Oroville, Wash., has recently taken over all title and interest in the power site and electric plant at Similkameen Falls, owned by the Similkameen Power Company, and plans extensive improvements to the plant, including the installation of electrical machinery capable of developing 2000 hp.

J. H. Cunningham, Portland, Ore., will shortly begin construction work on a light and water plant at Ridgefield, Wash.

The Pacific Coast Pipe Company, Seattle, Wash., will at once commence the erection of a two-story reinforced concrete addition to its plant to cost about $40,000. L. M. Grant is the engineer.

The B. L. Bailey Lumber Company, Wheeler, Ore., is starting work on a sawmill of 40,000-ft. daily capacity.

The mill of the Mountain Timber Company, Kalama, Wash., was destroyed by fire July 25. Insurance amounts to $250,000, and it is said that the plant will be rebuilt.

The city of Billings, Mont., has voted $30,000 of bonds, of which $23,000 will be used for water supply purposes and $7000 for installing a lighting plant.

Eastern Canada

TORONTO, ONT., August 1, 1914.

Duncan Chisholm, Toronto, has been granted a concession to erect a pulp and paper mill at Smooth Rock Falls on the Metagami River, Ont. The plant will cost $1,750,000 and the output will not be less than 150 tons a day.

The plant of the St. John Milling Company, West St. John, N. B., which was recently destroyed by fire, will be rebuilt at once. Machinery will be required for the new plant.

The McKinnon, Mather & Hyslop Company, Ltd., Toronto, has been incorporated with a capital stock of $40,000 by W. R. Mather, C. F. McKinnon, James Parker, and others, to build electric works.

The Builders Cement Tiles, Ltd., Hamilton, Ont., has been incorporated with a capital stock of $40,000 by John G. Gauld, Cecil V. Langs, and others, to manufacture brick and tile.

The Pollay Aeroplane Company, Ltd., Toronto, has been incorporated with a capital stock of $60,000 by H. R. Pollay, C. H. Porter, A. L. Stockton, and others, to manufacture hydro-aeroplanes.

The Ontario Fertilizers, Ltd., Toronto, has been incorporated with a capital stock of $100,000 by Leopold Macaulay, J. C. Macfarlane, and others, to manufacture fertilizers.

The Bassett Steamship Company, Ltd., Toronto, has been incorporated with a capital stock of $100,000 by Harry Riley, W. B. Stirrup, W. R. Anderson, and others, to construct vessels.

The Aultman & Taylor Machinery Company has been incorporated with a capital stock of $40,000 to manufacture farm machinery, engines, separators, etc., and has appointed Joseph Cushman, Chatham, Ont. to be its attorney.

The Empire Ring Mfg. Company has been incorporated with a capital stock of $30,000 to manufacture rings, watches, etc., and has appointed Holton R. Morwood, Welland, Ont., its attorney.

The Pathescope of Canada, Ltd., Montreal, has been incorporated with a capital stock of $250,000 by J. A. Brodeur, J. E. Bernard, and others, to manufacture films, etc.

The National Explosives, Ltd., Toronto, has been incorporated with a capital stock of $2,000,000 by Gerard Ruel, R. H. M. Temple, S. P. Biggs, and others, to manufacture explosives.

The Lewen Plate Company, Ltd., Montreal, has been incorporated with a capital stock of $50,000 by S. W. Tilden, Louis Gosselin, James Renwick, and others, to build and equip shops for the manufacture of machinery and tools.

The Southern Electric Light & Power Company, Ltd., Montreal, has been incorporated with a capital stock of $500,000 by L. N. D. Houde, J. A. Fournier, J. T. R. Gazelle, and others.

Reid Brothers, Ltd., Montreal, has been incorporated with a capital stock of $20,000 by Percy H. Reid, Harry A. Reid, and others, to manufacture machinery, automobiles, etc.

The Port Dover Brick & Tile Company, Port Dover, Ont., whose plant was recently destroyed by fire, will rebuild on an enlarged scale at a cost of $50,000.

Bids will be received until noon August 13 by H. C. Hocken, chairman of the board of control, Toronto, Ont., for the installation of coal and ash handling apparatus for the main pumping station.

The J. A. Caslake, Ltd., Collingwood, Ont., has been incorporated with a capital stock of $40,000 by John A. Caslake, Lewis Sinclair, F. S. Brown, and others, to manufacture machinery, etc.

The Ohio Brass Company has been incorporated with a capital stock of $40,000 to manufacture brass goods, iron, etc. The company has appointed Peter A. Hinds, Toronto, Ont., to be its attorney.

Western Canada

WINNIPEG, MAN., August 1, 1914.

The Miller Glass Company, Calgary, Alberta, has been incorporated with a capital stock of $25,000 to manufacture all kinds of glass.

The Malaspina Marble Quarries Company, Ltd., Vancouver, B. C., has been incorporated with a capital stock of $150,000 by Joseph Astley, Hugh S. Cayley, and others.

The Western Fireclay Products, Ltd., Regina, Sask., has been incorporated with a capital stock of $100,000.

The Canadian Pathephone Company, Ltd., Winnipeg,

Man., has been incorporated with a capital stock of $300,000 by N. Wolfe, J. W. Posson, E. D. Mitchell, and others, to manufacture phonographs and other musical instruments.

The New Departure Mfg. Company of Canada, Ltd., Rossburn, Man., has been incorporated with a capital stock of $200,000 by W. Gordon, H. H. Cockburn, V. W. Johnson, and others, to manufacture fire engines and appliances.

The Northern Manitoba Implement Company, Ltd., Lundar, Man., has been incorporated with a capital stock of $20,000 by P. Reykdal, G. K. Breckman, and others, to manufacture implements.

The Standard System, Ltd., Winnipeg, Man., has been incorporated with a capital stock of $50,000 by S. Herene, J. Dedds, J. Watson and others, to manufacture loose leaf systems and office appliances.

The Watt-Gibson Company, Toronto, Ont., will establish at once a planing mill in North Regina, Sask.

Government Purchases

WASHINGTON, D. C., August 3, 1914.

The U. S. Reclamation Service, 605 Federal Building, Los Angeles, Cal., will receive bids until 2 p. m., August 10, for furnishing and delivering one 18-in. x 6-ft. engine lathe. H. H. Ensign is chief electrical engineer.

Bids were received by the Bureau of Supplies and Accounts, Navy Department, Washington, on July 28 for material for the navy yards, as follows:

Schedule 6968

Class 14, Mare Island—One universal bench saw—Bid 1, $632.28, $604.28 and $532.64; 65, $546.80 and $441.80; 77, $547; 84, $543 and $427; 95, $396.50; 98, informal; 107, $440; 138, $475, $500, $535 and $560; 192, $475; 202, $405.35.

Alternate—Same, f.o.b. works—Bid 1, $565, $537 and $470; 52, $410; 52, $227 and $267; 65, $500 and $408; 77, $547; 84, $491 and $389; 95, $341.50; 107, $600; 138, $409, $434, $459 and $484; 202, $365.

Schedule 6969, Steam Engineering

Class 21, Bid A, Mare Island—Two horizontal single-feed pumps, with spare parts—Bid 25, $6943.50; 55, $4088.50, part; 61, units, part; 74, units, part; 175, $7423.60, part; 185, units, part; 189, units, part.

Bid B—Same, f.o.b. works—Bid 25, $6320.50; 55, $3684.50, part; 61, units, part; 175, $6565.60, part; 185, units, part; 189, units, part.

Class 22, Mare Island—One hydraulic pump—Bid 25, $1215; 95, $1132.20 and $1349; 177, $1167.30; 191, $1147.50.

Alternate—Same f.o.b. works—Bid 25, $1170; 95, $978.50 and $1169; 177, $1050; 191, $997.50.

Class 23, Mare Island—One forming machine—Bid 13, $548; 107, $390; 157, $480.

Alternate—Same, f.o.b. works—Bid 31, $200; 107, $343; 157, $470.

Schedule 7011, Yards and Docks

Class 62, Norfolk—One motor-driven vacuum pump and the control panel—Bid 6, $1000; 7, $950; 11, informal; 22, $1170, part; 25, $1055; 74, $800; 91, $880; 129, $1250; 151, $925; 163, $600, part; 173, $323.70, part; 183, $1570, part, and $1455, part; 213, $600, part.

The names of the bidders and the number under which they are designated in the above list are as follows:

1, American Woodworking Machinery Company; 6, American Air Compressor Works; 7, Blaisdell Machinery Company; 11, Buffalo Foundry & Machine Company; 13, Bertsch & Co.; 22, Beach-Russ Company; 25, Blake & Knowles Steam Pump Works; 31, Colburn Machine Tool Company; 52, Alexander Mills Company; 61, Epping-Carpenter Pump Company; 65, J. A. Fay & Egan Company; 74, Gardiner Governor Company; 11, Greenlee Brothers & Co.; 84, Harron, Rickard & McCone; 91, H. E. Jacoby; 95, Kemp Machinery Company; 129, R. G. Luther Company; 107, Manning, Maxwell & Moore; 151, National Brake & Electric Company; 138, Oliver Machinery Company; 151, P. H. & F. M. Roots Company; 157, W. H. Stoll Company; 163, Fred A. Schmidt; 173, Westinghouse Electric & Mfg. Company; 175, Warren Steam Pump Company; 177, Watson-Stillman Company; 183, C. H. Wheeler Mfg. Company; 185, Wagner Steam Pump Company; 189, G. & J. Weir; 191, William A. Wood; 192, Ward & Co.; 202, F. A. Brianda & Co.; 213, Hall Steam Pump Company.

The following bids were received at the Bureau of Standards, Washington, July 29, for furnishing machine tools:

Item one, 12 x 24-in. swing lathe, motor-driven; item two, 16-in. x 8-ft. swing lathe, motor-driven; item three, 24-in. radial drill, motor-driven; item four, one water-tool grinder, motor-driven.

Niles-Bement-Pond Company, item 1, $1394, 60 days; 2, $775, 45 days; 3, $335, 30 days; 4, $158, 30 days.

Kemp Machinery Company, item 1, Lodge & Shipley belt feed, $1553.50; do, gear feed, $1608.50; belt feed, with 7½-hp. motor, $1615.50; gear feed, with 7½-hp. motor, $1670.50; Lodge & Shipley 22-in. lathe, belt feed, $1370.50; gear feed, $1415. Item 2, Lodge & Shipley 1-hp. belt feed, $698; gear feed, $728; belt feed, 2-hp., $728; gear feed, 2-hp., $757. Item 3, Cincinnati Bickford drill, $434; 24-in. mechanic sliding head drill, $284; 23-in. mechanic sliding head drill, $244. Item 4, 24-in. Ransom, $168.80; 20-in. Townsend, $178.50; 16-in. Willey, $171.

Prentiss Tool & Supply Company, item 1, Fay & Scott lathe, $1175; item 2, Fay & Scott lathe, $505; 3, 23-in. Rockford drill, belt feed, $249; do, gear feed, $264; 26-in. belt feed, $287; gear feed, $302; 23-in. sliding head, belt feed, $286; gear feed, $301; 26-in. sliding head, belt feed, $311; gear feed, $326; item 4, $158, 32 days.

The Fairbanks Company, item 1, $1458; 2, $679; 3, $269; 4, $156.85; 30 days.

Manning, Maxwell & Moore, item 1, Reed 22-in. $1435; Putnam 22-in. $1150; Reed 24-in., $1580; Boyl & Emmes, 24-in., $1535; Putnam, 24-in., $1295; item 2, Reed, $625; Monarch, $510; item 3, Snyder, $410; Barnes, $275; Barnes, 25-in., $255; item 4, $150; Delivery, item 1, 30 and 35 days; 2, 30 days; 3, 30 and 35 days; 4, 30 days.

Judicial Decisions

ABSTRACTED BY A. L. H. STREET

BUYER'S RIGHTS AGAINST BREACH OF WARRANTY.—A sale of the machine is not subject to rescission by the buyer on the ground that the machine is not as it was represented to be, if it has been damaged in any way in its use by the buyer. Nor is the buyer in any case entitled to recover damages on the ground of breach of warranty without showing the actual value of the machine, as distinguished from the value it would have had if as it was represented to be. (Washington Supreme Court, Burnley vs. Shinn, 141 Pacific Reporter 326.)

ACCEPTANCE BY BUYER OF PARTIAL DELIVERY.—When several articles are sold under a single order for delivery all at once, the buyer's acceptance of part of the delivery amounts to acceptance of all the articles tendered; he cannot retain part and reject the remainder. (New York Supreme Court, Appellate Term; Mendetz vs. S. N. Wood & Co.; 148 New York Supplement 92.)

WARRANTY OF MACHINERY SOLD.—A machinery dealer's general agent has implied authority to warrant that a pump sold will do certain work satisfactorily. When a machine is sold under an oral warranty which is omitted from a written contract of sale later entered into, the buyer is entitled to rely on the warranty, if it was omitted from the written agreement through mutual mistake or fraud on the seller's part. (Kentucky Court of Appeals, Miller Supply Company vs. Limestone Mining Company, 167 Southwestern Reporter 889.)

RIGHTS OF NON-RESIDENT CORPORATIONS.—A corporation organized under the laws of one state is just as much entitled to transact interstate business in another state, uninterfered with by the laws of that state, as a corporation organized there; but every state has the right to prescribe the terms upon which a corporation of another state shall do a purely intrastate business. (Texas Supreme Court, Pierce Oil Corporation vs. Weinert, 167 Southwestern Reporter 808.)

WHEN SELLER MUST OFFER TO MAKE DELIVERY.—Where defendant contracted to buy 25 tons of aluminum from plaintiff to be delivered in installments as ordered by defendant during a certain period, but did not call for deliveries beyond 13 tons, plaintiff, on expiration of the period, was not entitled to recover damages for the breach of the contract as to the remaining 12 tons, without first tendering delivery of that quantity, or showing facts excusing such tender. (New York Supreme Court, First Appellate Division; British Aluminum Company vs. Trefts; 148 New York Supplement 144.)

Trade Publications

Tool Steel.—Halcomb Steel Company, Syracuse, N. Y. Booklet. Devoted to the Ketos brand of tool steel, and is designed for the use of tool and die makers in shops. Instructions on the forging, annealing, hardening and tempering of this steel are given, together with a number of illustrations showing that tools made from this steel do not shrink. A feature of the booklet is a page showing a large number of parts and blanks produced with tools made of this steel.

Conveyor Scales.—Electric Weighing Company, 180 Thirteenth avenue, New York City. Bulletin No. 8. Presents illustrations and a brief description of a scale for use in connection with belt and pan conveyors and for pivoted bucket carriers. The various advantages of the conveyor such as increased headroom, small power consumption, accuracy, irregularity of feed, etc., are touched upon, and there are a number of sketches showing the way in which the scale can be installed in industrial plants.

Radiators.—Pressed Metal Radiator Company, Pittsburgh, Pa. Pamphlet. Covers a line of radiators for steam, vapor and hot water heating, which are made in a great variety of sizes and capacities. Views of the different types of radiators are presented, together with data on the length and heating surface. Views of the several types of legs and brackets that can be supplied for mounting the radiators are given, together with a tapping list and a complete telegraph code.

Phosphorized Copper.—Damascus Bronze Company, Pittsburgh, Pa. Pamphlet. Concerned with a composition of phosphorus and copper for use in foundries to secure the desired percentage of phosphorus in castings for pumps, pump rods and liners, chambers, valve seats, nuts, stems, gears, etc. The use of this alloy in the making of phosphor bronze bearing metal is also touched upon.

Valves.—Pratt & Cady Company, Inc., Hartford, Conn. Collection of catalogues. Treat of various types of valves such as renewable seat gate valves cast steel valves for superheated steam, swinging check and back-pressure valves, renewable disk valves, brass and iron body gate valves, asbestos packed cocks and boiler room appliances and safety devices. In all of the catalogues the different sizes and styles of valves are illustrated and described, together with tables of sizes and dimensions, and in some cases views of the valves as installed are included.

Finished Die Castings.—German Bronze Company, Erie, Pa. Pamphlet. Refers to a line of die castings which are made in tin, zinc and lead base compositions, which melt at comparatively low temperatures. A statement of the advantages of using these castings is given, together with a list of points that should be taken into consideration in designing parts to be made in this way. A number of views of castings made by this process are included.

Emery Wheel Dressers and Cutters.—George H. Calder, Lancaster, Pa. Pamphlet. Illustrates and describes a dresser for large emery wheels, in which two kinds of cutters are used. Brief descriptions and illustrations of the two types of cutters are included.

Lubricants.—Continental Asbestos Corporation, Worcester, Mass. Three pamphlets. Point out the advantages of using an asbestos lubricant for machinery, car and locomotive journals and motor cars and trucks. This lubricant consists of asbestos amalgamated with oils, and the special advantage claimed for the combination is that it creates a film between the working parts that is a non-conductor of heat. Brief descriptions of the various lubricants are given, together with instructions for their use.

Steel.—Carbon Steel Company, foot of Thirty-second street, Pittsburgh, Pa. Pamphlet. Points out the advantages of using steels containing alloys of chrome, nickel, manganese, vanadium, etc., in the manufacture of tools, die blocks, fireboxes, drill rods, springs, etc. Brief descriptions of the different brands of steel, with the results of tensile tests, are given. Considerable information on the weights and extras of steel shapes, decimal equivalents of an inch, comparative temperatures, etc., is included.

Tool Steel.—Colonial Steel Company, Pittsburgh, Pa. Catalogue No. 13. Contains a brief historical statement of the process of making tool steel, followed by illustrations and brief descriptions of the various stages in the process at the present time, as practiced by this company. The uses of this company's steel for punches and dies, tools, drills, cutter blanks and disks are given, followed by instructions on the heat treatment of steel and a number of tables of useful information.

Lathes.—Cincinnati Lathe & Tool Company, Oakley, Cincinnati, Ohio. Two circulars. Describe and illustrate two engine lathes of the quick change gear type. One of these is driven by a three-step cone pulley and the other by one having four steps, double back gears forming a part of the equipment of both tools. In addition to the descriptive matter condensed specification tables of both lathes are included.

Metal Culverts.—Decatur Cornice & Roofing Company, Inc., 400 First avenue, New Decatur, Ala. Folder. Mentions a line of semi-cylindrical metal culverts, which are made in three sections, the bottoms, the foundation bars and the arches, all of which are nested for shipping. The culverts are made of open-hearth iron, and views showing the various parts nested for shipment as well as assembled are given, together with instructions on their installation.

Pumps.—Fairbanks-Morse & Co., Chicago, Ill. Bulletin No. 148. Describes a line of boiler feed and general service steam pumps, which are made in a number of different styles and sizes, including the duplex piston, duplex ram, outside center packed, single cylinder piston, automatic feed and direct-acting vacuum types. All of these are illustrated and briefly described and condensed specification tables are included. In addition to the pumps listed, views are presented of a number of different styles with references to the bulletins in which they are described and a number of tables of useful information are included.

Castings.—Duriron Castings Company, 90 West street, New York City. Pamphlet. Deals with the making of castings from Duriron, which is an acid, alkali and rust proof metal. The chemical and physical characteristics of the metal are given, followed by instructions on the design of the apparatus used and the precautions to be observed in setting it up. Illustrations with brief descriptions of some of the castings made with this metal are included. Among the castings shown are acid concentrating basins, valves, pumps, ejectors and pipe and fittings.

Valves.—Eynon-Evans Mfg. Company, Philadelphia, Pa. Catalogue No. 12. Relates to a line of valves of various types. The styles listed include all bronze, check, blow-off, exhaust and regrinding valves and various types of cocks. As a rule, two pages are given to each particular kind of valve, an engraving being presented on one page, with a brief description and list of sizes on the facing one.

Die Castings.—Doehler Die-Casting Company, Court and Ninth streets, Brooklyn, N. Y. Bulletin No. 105. Describes and illustrates interesting die casting work for small lighting and starting generators for automobiles, speedometer housings, phonograph reproducers, housings and covers of various kinds and parts for measuring and recording instruments. The possibilities of the process and the economies of using die castings are also explained.

Condensers.—Schutte & Koerting Company, Twelfth and Thompson streets, Philadelphia, Pa. Catalogue No. 5, Section AB. Illustrates and describes a multi-jet condenser, in which the only moving part required for its operation is a centrifugal pump that supplies the water at a pressure of 9 lb. The advantages claimed for this condenser are that it does not require an air pump, as the jets of water discharging through a number of nozzles in the throat and tail pipe act as a condenser and an air pump. Another advantage claimed is that the condenser can be connected directly to the exhaust pipe of the turbine. In addition to the illustrations of the various parts of the condenser a number of views of installations are presented and instructions for its installation are included.

Governors.—Gardner Governor Company, Quincy, Ill. Catalogue G-14. Illustrates and describes standard, spring and wide range governors, speed and pressure regulators, pump governors and their accessories. In the catalogue an illustration and brief description of each of the various types of governors is given, with dimension tables on the facing pages. Among the governors listed is one of the horizontal spring type, which is intended for use on engines where the headroom is limited. Directions for the operation and care of the governors are given, together with rules for calculating the sizes of pulleys required. Mention is made of the lines of air compressors and duplex pumps built by the company.

August 28 has been fixed for a conference at Harrisburg, Pa., of safety experts, representatives of Pennsylvania foundry plants and representatives of molders at the State department of labor and industry on regulations for safety and sanitation. The plan is to draft rules which will meet conditions and submit them to the State Industrial Board. A preliminary meeting was held some time ago and State inspectors are now visiting foundries in various sections to study conditions and have first hand information in the making of regulations.